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### Financial Results Continue to Improve

THE RAILROAD ADMINISTRATION announces that when complete statistics are available they will show that the railways under government control earned in July net operating income amounting to about \$77,000,000. The net operating income earned in July in the three test years averaged \$75,341,000. It follows that in July the railways for the first time in about ten months earned the government's entire guaranty to the companies. For the first seven months of the year the average net operating income in the three test years was \$475,363,000, while the net operating income in the first seven months in 1919 was approximately \$234,500,000. Therefore, the net operating income for the first seven months in 1919 was about \$241,000,000 less than in the corresponding months of the test period. In other words, in the first seven months of the year the railways earned about 49 per cent of the amount upon which the government guarantees are based.

As pointed out in an editorial in the *Railway Age* of August 22, the proportion of the guarantees being earned by the railways has rapidly increased since March. In May it reached 51 per cent and in June 64 per cent, while in July it reached 100 per cent. Until detailed figures for July are available it will be impossible to determine whether the seemingly excellent showing made in that month was due partly to the marked increase in the efficiency of operation or partly to drastic reductions in maintenance expenditures. One thing is certain, however, and this is that the railways have been operating with increasing efficiency and economy within recent months and as a result the financial showing has become much better than it seemed possible a few months ago it could be made with existing wages and rates. The improvement in results is partly due to better business, although in July the amount of freight handled was 11.3 per cent less than the amount handled in 1918.

The course of developments during the remaining months of the year will be followed with keen interest. Ordinarily the total business and total earnings in the second half of the year are much larger than they are in the first half, and in view of the results shown in June and July it is possible to be optimistic regarding the financial showing of the rest of the year. Unfortunately, however, operating expenses in August undoubtedly will show the effects of the sporadic but extensive strikes which occurred in that month. Indeed, the effects of those disturbances will be shown by operating expenses during the rest of the year, and it is not at all improbable that before the end of the year there will be other labor disturbances. The deficit for the year promises, however, to be smaller than it threatened to be two months ago.

### Condition of Freight Cars

THE ACTION of the Railroad Administration in increasing the day of the car repair forces to nine hours is wise; indeed, it is absolutely necessary. Reports showing the bad order cars do not reflect conditions accurately; nevertheless, they show that the situation is far from favorable. On August 2, 8.5 per cent of the cars were reported in bad order, of which 135,000 were for heavy repairs and 73,000 for light repairs. On August 9 the percentage of bad order cars had increased to 9.3 per cent, 144,000 requiring heavy repairs and 83,000 light repairs, and these figures, of course, do not show the full effect of the scattering strikes which took place early in August. A visit to any car repair yard will show that conditions are more serious than these figures indicate. Before the freight congestion became so severe in the early stages of the World War, the railroads generally had programs for retiring old and inadequate freight car equipment. For at least three years it has been necessary to discontinue the retirement of these old cars; the fact that many of them have been off their home lines almost continuously during this period and have received only sufficient temporary repairs to keep them in a safe condition has further complicated the situation.

During the greater part of the last three years the demand for freight cars has been so acute that only such repairs have been made as have been absolutely necessary to keep the cars in operation. Roads that have always taken a real pride in keeping their cars in first-class condition have hardly had an opportunity of seeing them and there is no question but what the cars have considerably deteriorated because of the lack of this same attention on the part of the foreign lines in whose hands they have been the greater part of the time. This is apparent on all classes of cars. Steel hopper and gondola cars will be found with the slope, floor and side sheets rusted through; in some cases, old sheets of car roofing have been bolted over the holes; in others sticks of wood, old overalls and rags have been used to fill up the holes. Under normal conditions, these cars would have received thorough and heavy repairs long ago. The condition of the older wooden cars is in many cases even worse.

Efficient transportation cannot be conducted with equipment of this sort and to a great extent the future prosperity of this country depends upon the furnishing of efficient transportation. The situation is so serious and the problem so big that immediate steps should be taken to concentrate attention upon it and to greatly improve the condition of the equipment.

### The Intangible Savings

THE OPERATING OFFICER is expected to keep trains moving with the organization and facilities given him for that purpose and in many cases some one in his department passes upon all budgets submitted for new work. In these budgets there are frequently listed new stretches of automatic signals for the relief of congested districts which in the final analysis may be "blue penciled" because of the feeling that as trains have been operated satisfactorily in the past, it is not necessary to go to the expense of installing automatic signals—at least, for the present. However, under present conditions with the large increases in expenses of all kinds to be met it is imperative that every means possible be used to increase efficiency of operation in order to decrease expenses. It may be the feeling on the part of officers passing upon budgets that automatic signals represent an increased expense, no doubt largely due to the fact that such installations may not make a large showing in direct savings while the intangible savings are overlooked.

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The time has now come when means for producing intangible savings should be taken into consideration the same as are those which make direct savings and automatic signals can perhaps produce as large intangible savings as any other one method employed for this purpose.

As an example two trains on a single track line recently received orders to meet at a certain station which was a register point and a water point. The engine on the east-bound freight ran short of water and cut loose from the train about six or eight miles out, running to the station for water. While there, the train was registered in and the engine started back for the train. In the meantime the westbound train pulled into the station and, as the record showed that the other train had registered in, the westbound train proceeded. The automatic signals stopped them a block apart and prevented a collision.

At another time a stretch of automatic signals had been placed in service in the late fall, prior to a severe winter. One night during the coldest weather one of the fast passenger trains was stopped by a signal and on flagging ahead it was found that about a foot of the rail had been broken out.

Numerous other instances could be mentioned but in the two cases above, an intangible saving was made which it would be hard to estimate. The cases mentioned are typical of others throughout the country. In addition to the savings made by the prevention of accidents it may be well to mention the better operating conditions produced, the saving in overtime and the releasing of equipment sooner than would be accomplished otherwise.

## The Cummins Bill's Proposed Limitation of Railway Profits

THE SENATE probably will be a somewhat more important factor than the House of Representatives in determining the railroad legislation which will be passed. The Senate's Committee on Interstate Commerce will frame the Senate bill. A sub-committee of this committee has drafted what is known as the Cummins bill.

The new railway legislation should deal with many important phases of regulation. There is, however, one phase which is much more important than any other. This is the question of adopting means of making rates and earnings such that they will promote efficiency in operation and enable the railroad companies to raise sufficient capital for the development of their facilities. If the new legislation deals wisely with the question of railroad revenues, it probably will be successful, even though in other respects it may not be well designed. If it does not deal wisely with the question of railroad earnings, it will be a failure, no matter how skillfully it may deal with other phases of the problem.

Therefore, the provisions of the Cummins bill relating to the way in which railroad earnings are to be dealt with, are its most interesting and important features. Most of its provisions indicate that those who drafted it have a statesmanlike grasp of the railroad problem. Unfortunately, the bill is weak just where it is most important that it should be strong.

It provides that for the purpose of rate-making the Interstate Commerce Commission shall divide the railways into rate-making groups. It continues:

"In viewing them (the rates) from the standpoint of their effect in producing revenue in any rate-making group as a whole, the commission shall take into consideration the interest of the public, the shippers, the wages of labor, the cost of maintenance and operation (including taxes), a fair return upon the value of the property in the group . . . the requirements for additional capital in order to enable the carriers to adequately perform their duties to the public and the conditions under which the same can be secured; and for the purposes aforesaid, the com-

mission shall from time to time determine the value of the property in each district and so lower or advance the rates of transportation, as nearly as may be, to provide said fair return as herein provided."

Elsewhere the bill provides for the creation of a Transportation Board and makes it the duty of this board to "inquire as to the new capital which the public interests may require the carriers, or any carrier, to secure in order that adequate and efficient transportation service and facilities may at all times be provided, and into the conditions under which said new capital may be secured. From time to time it shall certify to the Commission its findings in these respects, and the Commission shall accept such certificate or certificates as prima facie evidence in any hearing upon the matters to which such certificate or certificates respectively relate."

The apparent purpose of these provisions is to insure that the railway companies will be allowed to earn revenues sufficient to pay a reasonable return upon the value of their present properties and to raise sufficient new capital adequately to develop their facilities. But the bill contains a provision which seems to be inconsistent with those above quoted and adapted largely to nullify the good effects they would tend to produce.

Section 6 provides as follows:

"If any carrier shall receive from operation in any year more than a fair return, to be determined by the commission, upon the value of its property, held or used for service in transportation, which may include a just allowance to provide reasonably for future years in which there may be insufficient earnings, the excess above such fair return shall be paid to the transportation board within the first four months of the succeeding year, to be invested or expended for the following purposes, namely: One-half of all such payments to the Board shall be invested or expended for the purposes set forth in Section 25 hereof, and one-half thereof shall be deposited in a fund which, from time to time, shall be expended by the Board in the purchase of equipment to be released under proper terms to carriers in order to facilitate transportation, or to loan to carriers upon reasonable security in order to purchase equipment or other facilities in the event that such carriers are unable to secure elsewhere the funds with which to provide themselves with adequate transportation facilities."

The "purposes set forth in Section 25" referred to are all purposes relating to the improvement of the condition of employees.

This provision, if we interpret it correctly, means that if any railway company shall earn any more than the Commission shall have held to be a "fair return," all such surplus earnings shall be taken from it and used for the purposes outlined in the quotations from the bill which we have made. The result would be that if the Commission held that 6 per cent, for example, was a "fair return" upon the value of the Union Pacific, and the Union Pacific earned 10 per cent, the entire surplus over 6 per cent would be taken and used for purposes which had no relationship to the progress or prosperity of the Union Pacific. One-half of the excess would be used for the benefit of railway employees generally. The other half would be loaned to railway companies whose credit was not good enough to enable them to raise adequate capital in the market, or used to buy equipment for such carriers. The Union Pacific, under this plan, would not get the use of any of the surplus it earned, because, presumably, the fact that it had surplus earnings would exclude it from the class of carriers which could not finance their own requirements.

Students of railway regulation know what is meant by "a fair return upon value." This is a phrase invented by the courts to indicate the limit *below* which regulating bodies cannot go in fixing rates without unconstitutionally confiscating property. Therefore, what the bill provides is that the earnings of any group of railways shall be made barely large enough to avoid confiscation of the property of the entire group, and that at the same time no individual railway shall be allowed to earn and retain a return any larger than is necessary to avoid confiscation of its property.

For ten years the old system of regulation has been attacked upon the ground that railroad commissions, whatever the

provisions of the laws have been, have constantly tried to make railway rates as low as they could without confiscating property. It has been contended that the purpose of regulation should be, not to make the rates as low as was possible without involving confiscation, but to make them no lower than they must be made to enable the railways to render good service and adequately develop their facilities. The Cummins bill is an attempt to reform the old system of regulation, and yet it would specifically enact into law the restrictive and destructive principle upon which the regulating commissions have acted, namely, that the return of all railroads and each railroad shall be fixed regardless of the public welfare and as low as they can be fixed without confiscation.

The effect of the proposed legislation might be to improve the credit of some railways which under the old system of regulation have been prevented, regardless of constitutional provisions, from earning a fair return. But on any road which is, or might become, able to earn a "fair return," the incentive to increase efficiency of operation would be destroyed. Indeed, under this proposed legislation there would be a direct incentive, when a railway became able to earn more than "a fair return," to begin adopting measures to promote inefficiency. If a road earned more than a fair return, one-half of the excess would be turned over to the government to be used in helping other railways which were earning less. These railways might be direct competitors of the railway which was able to earn more than the so-called "fair return," in which case its surplus earnings would be used to enable them to compete against it more effectively.

The managers of a railway company which is, or which became able to earn the maximum return, unless they were angels rather than human beings, would, therefore, have an incentive to begin casting about for means of preventing the net return from increasing. The result might be, and probably would be, the payment of excessive salaries, exorbitant expenditures for maintenance, perhaps the payment of exorbitant prices for materials and supplies. Probably the government would then intervene. But government intervention would never be an effective substitute for the initiative and enterprise of the owners and managers. It would probably do more harm than good.

It will require changes in these provisions to make the Cummins bill a good bill. It might be changed to provide that any railway company earning more than "fair return" would be allowed to retain only three-fourths, or two-thirds, or one-half, or even one-third, of its surplus earnings, depending upon how large the surplus earnings were. As long as every increase in efficiency will result in some increase in the amount of return a company will be allowed to earn and use for its own purposes, the incentive to increased efficiency will not be destroyed, although it should be frankly recognized that even a partial limitation of profits will tend to reduce the incentive to efficiency.

It is now generally conceded in this country that private management is preferable to government management of railroads, upon the ground that it is more efficient. But many of those who concede this do not seem to recognize the further fact that the greater efficiency of private management is almost entirely due to the fact that heretofore the relative profits earned and kept by railroad companies have depended on how efficiently they were managed. Destroy the opportunity to increase profits under private management by increasing efficiency, and the superiority of private over government management will speedily disappear. This seems so obvious that it is hardly conceivable Congress will return the railroads to private operation under legislation which will prohibit each and every individual railroad, no matter how efficiently managed from enjoying profits exceeding the so-called "fair return."

## The Bituminous Coal Situation

Nearly 100,000,000 tons less bituminous coal has been produced in the United States up to the end of August this year than was produced up to August 30, 1918. The production of bituminous coal in 1918 was extraordinarily large because of the unprecedented demand by war industries both in America and abroad. It was made possible by the economic measures adopted to encourage production and the emergency measures, such as the pooling of coal, the zone system of distribution, etc., which the Railroad Administration adopted.

There is a coal car shortage today, more severe in some parts of the country than in others, but a real shortage. Is the situation a dangerous one; is it not only possible, but probable, that there will be a serious shortage of bituminous coal for manufacturers this year; is the Railroad Administration falling down on its job in regard to taking care of the bituminous coal operators' needs?

First, as regards the danger of a coal shortage; bituminous coal needed by the country is an undetermined quantity. Dr. Garfield, when he was fuel administrator, made, or is supposed to have made, an estimate of the needs of the country, placing them at 500,000,000 tons per year. Up to August 30, 299,705,000 tons of bituminous coal had been produced, while in 1918 up to August 30, 396,074,000 tons had been produced. The production in the last week in August, 1919, was 10,197,000 tons, comparing with 12,691,000 tons produced in the corresponding week of 1918.

Almost immediately after the signing of the armistice there was a widespread cessation of manufacturing industry. Plants which had been working two shifts a day were reduced to one and in many cases the working week was cut down by one or two days. Furthermore, coal continued to be delivered to manufacturers on a basis of full and overtime working schedule and the coal storage facilities of manufacturers generally were taxed to their utmost. On December 31, 1918, there was an important and large carry-over of bituminous coal. On December 31, 1917, there was a minimum carry-over. The production, therefore, in 1918, as determined by the United States Geological Survey, from which the figures used above are taken, does not accurately correspond to the consumption in 1918.

The carry-over of coal was used by manufacturers in the early part of 1918 to supply their greatly diminished needs for as long a time as possible. The entire cessation of munitions' manufacture and the great reduction in many other lines of manufacture in the early part of 1918 slowed down the production and transportation of bituminous coal to such an extent that the Railroad Administration quite properly looked on the situation with considerable concern. Coal miners were urged to continue to produce coal despite the falling off in demand and manufacturers were urged to order coal in anticipation of future needs. This sound advice of the administration was not followed by either the coal operators or manufacturers, neither one desiring to tie up capital in stored coal even where storage facilities were available.

In the present controversy between the coal producers and the Railroad Administration—for the interchange of views on the coal situation has taken on the nature of a controversy—the coal producers brush aside as only natural, human and good business their own refusal to mine coal in anticipation of future needs, but are loud in their condemnation of the Railroad Administration's failure to repair coal cars during the period of depression—the first few months of 1919.

Dun's Review of business conditions on August 30 says "Neither in volume nor in value is new business as distinguished from activity on past orders what it was a month

ago in some important lines." But the general impression one gets from a week to week's study of Dun's and Bradstreet's reviews of trade is that of widespread, general business activity with the rate of production running high, although not as high as it would run if unhampered by strikes, threatened strikes and forced reduction of hours of work.

There is no agency at present which is making a systematic study of the needs of the country for coal. If an entirely candid opinion could be drawn from each of the larger coal producers, a fair guess could be made at the general situation, but with the coal producers we must remember that the wish is father to the thought in their estimate of the country's coal requirements. Congress has failed to make an appropriation permitting the Geological Survey or other agency to make a study of the country's coal requirements. A somewhat limited canvass of coal producers, railroad men closely in touch with the coal situation, and manufacturers in the east suggests that a coal shortage this year is a possibility but not a probability. The possibility, however, of such a calamity under present circumstances justifies forehanded measures to prevent its occurrence.

If railroad equipment were in thoroughly good repair it is safe to say that the coal car shortage would be very much reduced if not entirely eliminated. In the Operating Statistics Section's reports, freight cars are not classified, so that bad order cars include box, automobile, etc., as well as open-top cars. The administration greatly reduced its activities in repairing freight cars during the period of slack business in the first part of 1919. Its excuse was that it did not have the money. This is the same excuse which private owners have given in past years for pursuing a like, seemingly short-sighted policy. On some of the larger bituminous coal carriers, the bad order situation as regards coal cars is estimated to be about double that of normal times. That is, where a road would, under normal conditions, at this time of year, have only about 4½ to 5 per cent of its coal cars awaiting or under repair, there are now from 9 to 10 per cent in bad order. Furthermore, both the coal operators and corporation officers who are keeping closely in touch with the coal car situation claim that there are a considerable proportion of coal cars in service which would, under ordinary conditions, be classified as bad order cars and would be placed in shops or on the heavy repair tracks.

In his testimony before the Senate committee investigating the coal situation, J. D. A. Morrow, president of the Coal Producers' Association, claimed that not only was there a shortage of cars but also a "transportation difficulty," meaning apparently a slow movement of coal cars.

The best sources that we have wherewith to judge of the coal situation in regard to production are the reports of the United States Geological Survey. The weekly reports include a table showing the percentage of capacity of bituminous production actually achieved during the week for the principal coal regions of the United States. For the week ended August 23, production ranged from about 44 per cent of total capacity in the western coal regions and 50 per cent in the Illinois regions to 87 per cent in the western Pennsylvania districts and to 85 per cent in the Westmoreland district. The rating of districts by the Geological Survey is on a theoretical, perfect production, so that probably 85 per cent production would be a normal, practical, full production. The causes of failure to attain 100 per cent production, which are based on data furnished by the producer, are classified by the Geological Survey as between car shortage, labor shortage, strikes, etc. Car shortage is by far the largest factor in the loss of production of nearly all of the coal districts and varies in the week ended August 23 from a loss, due to this cause, of 49 per cent in the western district and 36 per cent in the high volatile district of southwestern

Virginia to 4 per cent in the central district and 9 per cent in the western Pennsylvania district.

The following table shows the percentage of cars placed to the total number of cars ordered on 12 of the largest bituminous coal carriers. The roads are numbered rather than given by name because the figures are for one particular week, August 23, and it might be misleading to show one road low or high in a table such as this because conditions as between different roads vary from week to week, but the comparison of all the roads in 1919 with the corresponding week for 1918 is accurate and significant.

	1919	1918		1919	1918
1.....	97	79	7.....	101	105
2.....	80	107	8.....	103	72
3.....	79	84	9.....	86	84
4.....	98	99	10.....	98	63
5.....	104	99	11.....	75	92
6.....	79	99	12.....	100	107

The total number of coal cars required by the coal operators for the whole country in the week of August 23, 1919, was 164,000. The total number placed was 155,000. In 1918, in the corresponding week, 173,000 cars were required and 149,000 were placed. In other words, this year the Railroad Administration met 94 per cent of the coal operators' requirements while in 1918 at this time the Railroad Administration was meeting only 86 per cent of the operators' requirements.

While the war-time measures such as pooling of certain grades of coal and the limitation of the distribution of coal to zones are no longer in effect, the common use of all companies' cars by the administration is effective and the car pool formed by the railroads voluntarily at Pittsburgh, prior to the taking over of the roads by the government, is at present in full operation. A good measure of conditions both at the mines and of the handling of coal cars by the railroads is shown by the coal car loadings. The following table shows the bituminous coal cars loaded in the week ended August 23, 1919, compared with the corresponding week of 1918:

	Number Cars Coal Loaded		Decrease	
	1919	1918	Cars	Per Cent
Eastern region.....	28,642	36,227	7,585	20.9
Allegheny region.....	67,087	67,091	4	..
Pocahontas region.....	25,855	26,147	292	1.1
Total pool lines.....	121,584	129,465	7,881	6.8
All other regions.....	57,696	76,798	19,012	24.6
All regions.....	179,280	206,173	26,893	13.4

The falling off as compared with 1918 is, therefore, considerable. On the other hand, the loading in the Eastern, Allegheny and Pocahontas regions was 10.8 per cent greater for the week of August 23, 1919, than in the corresponding week of 1917.

One factor that must be kept in mind in comparing 1919 and 1918 is that with war restrictions off and with the almost universal acceptance of a higher standard of "living" in business as well as in personal and social matters, there is a large demand for higher grades of coal. The poorer grades of coal of some of the central western and western districts are passed over in favor of considerably more expensive eastern coal with the result that this added strain of a longer average haul is put on the transportation facilities of the country.

There is another factor, local but important. Coal is moving all-rail into New England in much larger proportion than it would under normal conditions. Coastwise water rates are so high that the all-rail routes compete successfully with the water route. This also increases the strain on railroad facilities.

To sum up: there is a coal car shortage of varying intensity with a possibility, but not a probability, of serious bituminous coal shortage this winter. We are without adequate means of determining the coal needs of the country

and either the Railroad Administration, itself, or some specially authorized body ought immediately to undertake a careful study of manufacturers' needs. If the possibility of a coal shortage appears in the light of the results of this study to be slight, present methods of car distribution and coal distribution can fairly safely be continued. If in the light of this study the possibilities of a severe coal shortage are serious, both the Railroad Administration and the coal operators ought to submit to such measures as were put into effect last year—preferential movement of coal, the zone system and pooling of certain grades of coal.

Since the present agitation in regard to coal car shortage was begun, transportation conditions have improved and to this extent the agitation has been beneficial to the country. It should not, however, be allowed to be used as an argument for higher coal prices without, at least, a far more convincing showing of the imminence of a dangerous coal shortage than has been made hitherto.

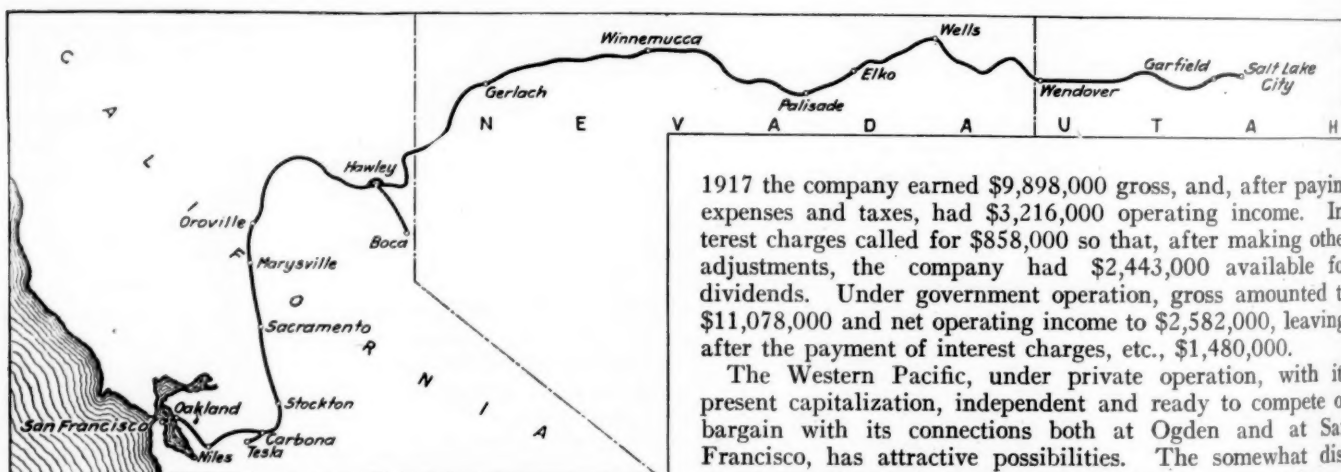
### Western Pacific

THE TOTAL MILEAGE operated by the Western Pacific in 1918 was 1,012, and the average haul of revenue freight was 514 miles. The Western Pacific was built to give the Gould system a share in the Pacific coast business. Operation of the road has demonstrated that to get a share of this business it was necessary to do something more than to have an entrance into San Francisco. Branches were begun to Reno, Loyalton, Tooele and San Jose via Niles. In 1918 both the Reno and the Tooele branches were in operation, but the director general ordered work stopped on the San Jose branch on the ground that the Southern Pacific already

large increase in empty cars hauled by the Western Pacific. The total tonnage of bituminous coal carried in 1918 was 983,000 tons, an increase over 1917 of 520,000 tons. In other words, the increase in bituminous coal tonnage and of other products of mines more than offset the decreases in each one of all of the other general classes of traffic. Empty car miles totaled 22,379,000 in 1918 as against 18,266,000 in 1917. Loaded car mileage totaled 44,893,000 in 1918 as against 46,564,000 in 1917. The changes in the character of the freight which the Western Pacific was called upon to handle are probably reflected in the ton-mile rate received. Despite the increase in freight rates which the administration put into effect, which gave most other roads an increase of from 15 to 30 per cent, in the average ton-mile rate received, the ton-mile rate on the Western Pacific was 6.6 mills in 1918 as against 6.7 mills in 1917.

Notwithstanding the large increase in empty car mileage, the average revenue train load was increased by over 60 tons, totaling in 1918 662 tons. This is a fine showing for a road like the Western Pacific. In 1917 there were 65 Consolidation locomotives of 43,300 pounds tractive power, and five Mallets of 80,000 pounds tractive power each in service. During 1918 five new heavy Mikados equipped with superheaters, of 60,200 pounds tractive power each, were received.

After the Goulds were compelled to give up their plan for a trans-continental railroad system, the Western Pacific went into receivership. The company was reorganized and with a conservative capitalization. In place of the \$50,000,000 first mortgage bonds and \$25,000,000 second mortgage bonds originally issued, there were \$20,000,000 new first mortgage bonds issued. In addition there are outstanding \$3,600,000 equipment notes. The company has \$75,000,000 stock, divided \$47,500,000 common and \$27,500,000 preferred. In



The Western Pacific

had facilities at San Jose and a connection with the Western Pacific, so that since the two roads were to be operated jointly, shipments could be made "via the Western Pacific with the same facility as accorded shipments via the Southern Pacific."

The Western Pacific was a highly competitive enterprise from its inception. Under government operation the operating organization made a particularly good showing, but the financial results of operation were not so favorable. This, of course, did not affect the Western Pacific Railroad Company one way or the other since the government is to pay a fixed rental for the use of the property.

The total tonnage of revenue freight carried in 1918 was 2,689,000, comparing with 2,329,000 tons carried in 1917. The most noticeable difference in the business done in 1918 as compared with 1917 is in the increase in coal and the

1917 the company earned \$9,898,000 gross, and, after paying expenses and taxes, had \$3,216,000 operating income. Interest charges called for \$858,000 so that, after making other adjustments, the company had \$2,443,000 available for dividends. Under government operation, gross amounted to \$11,078,000 and net operating income to \$2,582,000, leaving, after the payment of interest charges, etc., \$1,480,000.

The Western Pacific, under private operation, with its present capitalization, independent and ready to compete or bargain with its connections both at Ogden and at San Francisco, has attractive possibilities. The somewhat disappointing financial showing made in 1918 is not due to inherent difficulties under competitive conditions.

The following table shows the principal figures for operation of the property by the government in 1918 and by the company in 1917. This is not the corporation income account.

	1918	1917
Mileage operated .....	1,011	1,011
Freight revenue .....	\$9,200,062	\$7,968,721
Passenger revenue .....	1,373,496	1,473,538
Total operating revenues .....	11,078,497	9,898,484
Maintenance of way and structures ..	2,034,765	1,577,090
Maintenance of equipment .....	1,635,871	999,072
Traffic expenses .....	187,314	254,562
Transportation expenses .....	3,626,433	2,993,342
General expenses .....	254,193	274,312
Total operating expenses .....	7,893,879	6,190,055
Taxes .....	600,976	492,297
Operating income .....	2,581,796	3,215,936

CORPORATE INCOME ACCOUNT		1918
Compensation .....		\$1,900,350
Gross income .....		2,397,270
Net income .....		792,281
Dividends .....		
Surplus .....		742,281

# War-Time Economies in Strengthening Old Bridges

## Two Through Spans of Unusual Type Were Reinforced by Doubling Up the Trusses

By E. E. Howard,  
Consulting Engineer, Kansas City, Mo.

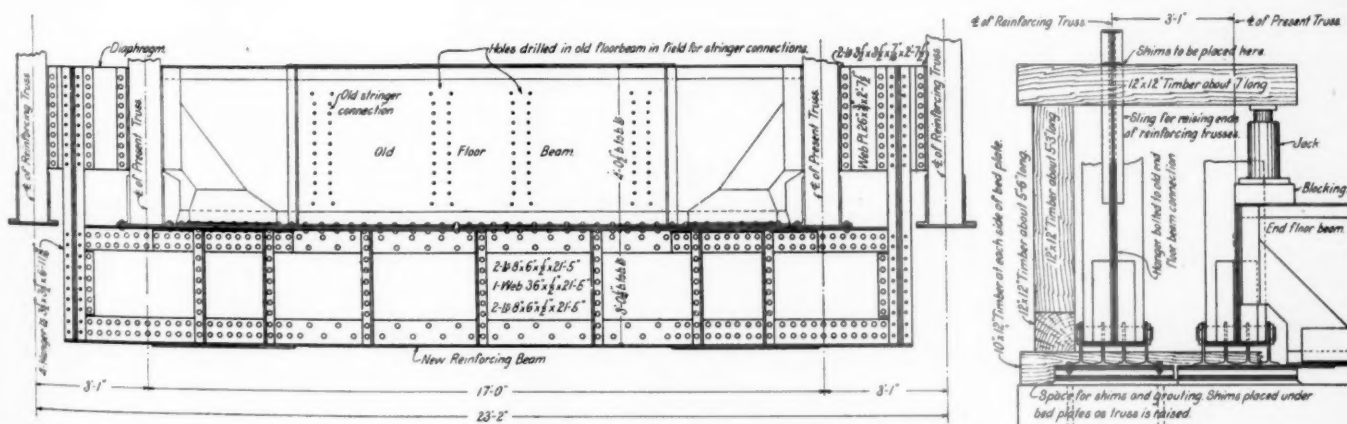


Construction View During Erection of the Reinforcing Trusses and New Floor Members

DURING THE LATTER PART of 1918 two 100-ft. single track railway spans on the Kansas City Southern were reinforced for modern standard loading by adding extra trusses and stringers from like spans which had previously been taken out of service. The spans recently reinforced are in two different bridges and had been continued in service for some years under traffic much in excess of the loads for which they were designed by maintaining slow orders. Formerly there were a number of spans of

span designed for present loading. The scheme was also devised of strengthening the old spans by the use of the metal of the similar spans held in storage, and this was adopted.

The reinforced spans are ample for Class E-55 loading and the additional material was added without interruption to traffic. The required modification of the substructure was slight, no changes in the old spans were necessary except for the connection of new metal, and the total additional new



Manner of Reinforcing the Old Floor Beams with Beams Hung from Both New and Old Trusses and Method of Lifting the Ends of the New Trusses

this type on the road, but all had been removed except these remaining two. They are through pin-connected spans, of the so-called A-truss type, with four 25-ft. panels.

It developed that several of the old spans were still stored in the yards and were available for use and that the metal of the old spans in position and that in storage was in good condition. Estimates were made for replacing one of the spans with two 50-ft. deck girders, building one new pier, and for replacing the span of the other bridge with a truss

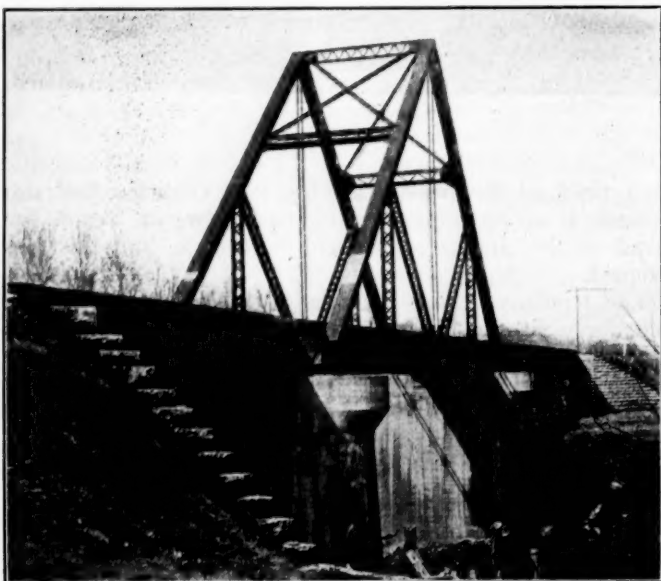
metal required was only about 15 tons per span. This method was especially advantageous in view of the difficulty of securing new structural metal work in the summer of 1918, while the money outlay was considerably less than that required for all new material.

The added trusses are set outside the existing trusses at 3 ft. 1 in. centers. Diaphragms connect the pairs of trusses at the three intermediate panel points and support the floor beams. The trusses are also connected by occasional batten

plates. A new floor beam was placed underneath each existing intermediate floor beam and riveted to its lower flange, forming a composite beam. The new beams extend out and hangers from their ends connect to the diaphragms joining the trusses. The stringers in the existing spans were eight feet center to center. Extra stringers two feet center to center were put in between them to divide the track loads.

The end floor beams were not reinforced, but the piers were built up, and special shoes provided to support the ends of the two middle springers. The lower lateral system was somewhat modified so that connection was made to the new stringers as well as the two original ones.

The erection was very simple and required no falsework. The piers were first cut down a distance of about five feet and built up in reinforced concrete, with the ends extended sufficiently to provide seats for the shoes of the new outside trusses. These reinforcing trusses were erected by suspending them from the existing span and the new floor beams were similarly swung in place and supported. After connections at the intermediate points had been made, the ends of the added trusses were jacked up, and suitable shim plates placed under the end shoes to subject the new trusses to enough deformation so that they would take their share of the load. Careful distortion measurements made after the



One of the Old Spans After the Piers Had Been Prepared to Receive the New Trusses Outside the Old Ones

reinforcing of the spans was completed show satisfactory, although not exact, distribution of live load stresses between the trusses at each side.

The work was carried out expeditiously and the completed structures, while somewhat unusual in appearance, are rigid, substantial and of ample strength. The estimates of the cost for the bridge where two 50-ft. girder spans and one new pier could have been used, was about \$11,000 for new construction throughout, and about \$8,000 for the reinforcing of the existing span. For the bridge where a 100-ft. opening had to be maintained, the cost of a new bridge throughout was about \$19,000 and of the reconstruction with four trusses, about \$7,500. These figures represent the cash outlay, without allowance for the amount the railroad charged itself for the old metal stored in the yards, nor for the salvage value of the old spans had they been removed. The total cash outlay, therefore, was cut down from \$30,000 to about \$15,000—a matter of some importance during the war-time conditions.

The two pictures are not of the same bridge, but one

shows the unaltered span at one of the crossings after the piers had been lengthened to provide for the new trusses, and the other shows the reinforcing trusses in place on the other bridge and the superstructure work practically completed.

The scheme for the work was devised and the plans prepared by Harrington, Howard & Ash, consulting engineers, Kansas City. The work was carried out by the Kansas City Bridge Company, all under the direction of J. M. Weir, chief engineer, Kansas City Southern, Kansas City.

## Senate Discusses Railroad

### Labor Question

THE RAILROAD LABOR SITUATION was the subject of a general discussion in the Senate on September 4 initiated by a speech by Senator Underwood of Alabama, who discussed the labor provisions of the Cummins bill and advocated the adjustment of wage disputes by the same tribunal that fixes the rates.

"Industrial wars between labor and capital must ultimately find a solution," he said, "that will stand for industrial peace without resort to force to settle the matters in dispute or we must admit that the advance of civilization has come to a halt. The great difficulty that confronts the country in the settlement of its labor disputes is the fact that up to the present time we have found no sound basis on which to rest the settlement. The avoidance of railway strikes and lockouts in the future is of far greater importance in the nation than the settlement of ordinary industrial disputes. In the latter case the issues involved are largely confined to two contending sides and the public at large, as a rule, has only a remote interest in the controversy, but in disputes between labor and capital engaged in transporting the commerce of the country, the public's interest is vastly greater than that of the owners of the property or of the wage earners in their employ.

"Having the power to act, the question confronts us as to whether the time has come when the Congress should exercise this power and appoint a commission to determine this grave and pressing question. The successful solution of the wage problem on the interstate railroads of the country is most essential to the Nation's economic life and of vital importance to every citizen of the land for it must be borne in mind that an increase of the rate of pay of the men employed in transportation is almost sure in the end to translate itself into increased freight and passenger rates that must be paid by the public and borne by the commerce of the country.

"There is but one way out, in my judgment, and that is to appoint a tribunal with the power to adjust these matters, which has the time to consider and the opportunity to know the facts. Such a tribunal must not only have the power and be prepared to do what is right and just by the labor employed on the railroads but must have authority and power to see that property is not confiscated by its decisions. For, should you confiscate the property of the transportation companies of America, you would break down the channels of transportation as effectively as you would break them down in a strike, with the resultant injury to the people of the United States. A tribunal of this kind must also have the authority and opportunity to consider the rights of the shippers and travelers of America, who in the last analysis will bear any increased burden that falls on the carriage of property or persons over the transportation lines. This tribunal must have authority and power to protect the rights of the whole people of the United States against the recurrence of lockouts and strikes.

"What body, then, is most capable of determining all these

questions and fairly adjusting them to the interests of all parties concerned? A board of arbitration to be appointed by the employers and employees of the railroad companies of the United States will only look to the matters in dispute between the contending parties, and will not have in mind the ultimate rights of the people. The general courts of the land are not equipped either with the knowledge or the power to obtain information in reference to the cardinal facts that must decide the controversy. If you want a final and just solution of such a controversy, you are practically driven to leaving the decision to a governmental commission that has full and ample opportunity to investigate the rates of wage, the earning power of the transportation companies, the cost of living, the burden that rests on the shipping public, and after a fair and full investigation, to determine what is a fair, just, and living wage for the men and to how great an extent a fair, just, and living wage may be increased to enable the toilers to secure the higher ideals of life and living; second, how far this charge can be placed on the capital of the corporation without breaking it down, destroying the value of its securities, bankrupting its property, and taking away from the investing public a fair return for capital invested; third, how far an increased charge for labor, interest, or supplies can be handed down to the public without doing injustice to the shipper and traveler and without becoming a menace to the development of the industry of the country.

"All of these questions must be determined by a court or an independent commission, but their findings, except so far as they may determine the rate for transportation that must be paid by the railroad companies and the rate of wage that must be received by the men if they continue their employment, will be academic, because they will have no power to operate on the side of the problem in which the general public is interested. The power to determine what are just and reasonable rates of transportation of persons and property over the interstate railroads of this country is fixed by law, and any increase or decrease of these rates must be made under the law of the land. Therefore it is essential that the board or commission that is given the power to adjust the wage scale of the men must also have the power to reflect its findings into the rates charged for the transportation of persons and property over the railroads. The board or commission that is created for the determination of these grave questions must determine whether the rates for transportation shall be increased and whether a charge made against the railroads for increased wages shall remain a charge on its capital, or whether in justice and fair dealing, it shall be handed on to the shipper and the traveling public.

"It is therefore clear to me that the same power that has the right to fix the rates of transportation should have the right to fix the rates of wage and the hours of labor on the great transportation companies of the United States, and that this power and this duty should be given irrevocably to a governmental commission or board in order that it may do justice between employer and employee. The granting to a governmental commission or board of the power to determine the hours of labor and the rate of wage will solve the problem for the future. Men will not strike against the just decisions of the government. After a fair determination of the controversy by an impartial tribunal, public opinion will force the contending parties to accept the verdict rendered as final. It must be done in the interest of the men involved, the industry of the people, and the peace of the Nation."

In reply to Senator Borah of Idaho, Senator Underwood said he was not advocating compulsory arbitration. He thought the policy of arbitration has failed, but that the time has come when the government should fix a just and fair wage and make strikes impossible. "A universal strike on the great interstate commerce carriers of America is un-

thinkable," he said, "and it should be prohibited by law just as you prohibit a man from burning his house for fear he may set fire to his neighbor's house."

Senator Borah wanted to know how he would compel the men to accept the wage fixed in case it was unsatisfactory. Senator Underwood said he would not attempt to do that. He would merely prohibit them from conspiring for the purpose of interfering with commerce, as proposed in the Cummins bill. Senator Robinson pointed out that the bill expressly prohibits the right of the employees to quit at will but it does penalize combinations or agreements among them to interfere with commerce. Senator Borah said he could conceive of large numbers of men quitting work because of dissatisfaction with their wages without the intent to interfere with interstate commerce and he thought it would be difficult to draw the line with sufficient accuracy to determine the intent. "Your law will be ineffective," he said, "because the men will say, 'we are not desirous of interfering with interstate commerce. We simply say that your wages are too low. We are going to seek work somewhere else.'" He said he was in favor of a government tribunal to adjust the question of wages and to call the employer and employee together and to avoid strikes and force just as often as possible, but he did not believe it is wise or that Congress has the power to go as far as to say that if the men are not satisfied with the judgment of that tribunal they shall be punished through the criminal processes of the law.

Senator Underwood said: "But I believe that the hour when the government establishes a fair and just tribunal where these men may have their day in court 90 per cent of them will be willing to accept the findings of the court and that will end all controversy, and if the other 10 per cent want to quit the opportunity will be given to them and other men will take their places."

Senator Williams of Mississippi said: "When a lot of men strike because their living conditions are intolerable or because their wages are not sufficient that is a thing with which we are approvingly acquainted, but we are beginning lately to learn a European habit and it is chiefly against that European habit that the provisions of the bill would operate. Men are no longer striking because they are not getting enough to give them a good standard of living. They are striking out of sympathy with one another, to enforce general propositions that have nothing to do with their individual conditions and to force the Congress of the United States to do things that they are afraid the Congress does not want to do. Quitting work is one thing. Attempting to coerce Congress and the public by closing up the avenues of interstate commerce and cynically suggesting 'starvation or surrender' is another thing and all wrong and intolerable."

Senator Thomas of Colorado suggested that in the passage of the Clayton law Congress exempted agriculturists and laborers from the operation of the law. Senator Williams said he had voted for it at the time under the idea that he was helping the under dog, "but," he said, "things had not then assumed the position they have now assumed of having men threaten us that unless we enacted certain legislation they would enact it by force."

**Traffic Work Lectures.**—The University of Cincinnati, in its College of Engineering and Commerce, will have a course in traffic management this year. Studies and lectures will be given evenings to accommodate those engaged in commercial affairs.

**Lehigh Valley stockholders** on June 15, 1919, numbered 15,689, with an average holding of 77 shares. In 1918 there were 12,613 shareholders, with an average holding of 96 shares, according to a statement by President E. E. Loomis. Nearly 37 per cent, or 5,765 shareholders, are women.

## Executives Protest Against Limitation of Income

WASHINGTON, D. C.

THE ABILITY of the railroads to finance necessary improvements would be seriously impaired, in the judgment of railway executives, by the provision in the Cummins railroad bill, introduced in the Senate last week, which proposes to limit the amount which a railroad company may retain out of its earnings from rates prescribed or regulated by the government, according to a statement filed with the Senate Committee on Interstate Commerce on September 10 by Thomas De Witt Cuyler, chairman of the Association of Railway Executives, on behalf of the steering committee of the association. This feature of the bill, Mr. Cuyler says, by removing the reward of success, would effectually defeat the apparent desire of Congress and of railroad economists to so establish railroad credit as to make it possible to finance railroad improvements partially by the sale of stock rather than solely by bonds.

Mr. Cuyler's statement follows: "The responsibility for the improvement and development of railroad facilities, and of raising the money from time to time needed to finance the same, rests upon the boards of directors and the stockholders of the railroad companies, of whom the railway executives are the authorized representatives and for whom they are the authorized spokesmen.

"In view of this responsibility, the steering committee of the Association of Railway Executives, appointed especially for the purpose of seeing that the facts and the circumstances affecting the railroad problem are properly presented to your committee and to the corresponding committee of the House of Representatives, without undertaking at the moment to review in detail the provisions of Senate Bill 2906, presented by Senator Cummins, deems it an imperative duty to call special attention to one feature which, in its judgment, seriously endangers the transportation interests of the country and the constitutional protection of all property.

"While adopting the alternative of private ownership and operation, and relying upon private capital, rather than upon government ownership, to provide the transportation facilities which the country requires, this bill, for the first time in the history of our legislation, undertakes to limit the amount which a company, by good management, fortunate location, efficiency, and other lawful means, is able to save out of the rates which the government itself prescribes or regulates. The bill provides that, if any company shall receive from operation, during any year, more than a 'fair return,' to be determined by the Interstate Commerce Commission, on the value of its property, the excess above such 'fair return' shall be paid over to the government within the first four months of the succeeding year.

"It ought to be borne in mind that the earnings of the companies are to be made from rates fixed or authorized by the commission. Inasmuch as the Congress has no right to authorize the collection of unreasonably high rates from the shippers who happen to need the services of a particular road, or to make rates higher than is reasonable for the service, it must be presumed, as against the rate-making power, that the rates which it prescribes or authorizes are reasonable. It follows that any earnings which a company makes will be derived from reasonable rates. Otherwise, the shippers, or those on some roads, would be over-charged and grossly wronged.

There is no such thing as unreasonable earnings from reasonable rates, and, therefore, if the rates are not more than reasonable, as would be presumed if lawfully made, it is impossible to conceive of there being an excess of earnings over a fair return. Returns cannot be more than fair

if provided by reasonable rates. The only use made in the law of the terms 'fair return,' is to establish a test below which the legislature may not without confiscation reduce earnings from rates. It is, we think manifest, that a company is entitled, as a property right, to all it can save from reasonable rates, and to deny it this right would be to deny it the right of constitutional protection for its property. The attempt to do this, no matter how high the purpose, would be the beginning of a fatal policy which would tend to the removal from all property of its constitutional protection.

"Moreover, to take from a company a part of its net earnings derived from reasonable rates, not only diminishes, and, in some cases removes, the incentive to competitive effort, efficiency and economy, but forecloses the hope of success as an attraction to capital. This limitation, together with the necessity of constantly expending substantial sums from the apparent net earnings in renewals and replacements incident to maintenance of roadway and equipment, would in our judgment, seriously impair the ability of the railroads, upon which the country is dependent for handling its business, to finance the necessary additions, betterments and equipment.

"Instead of attracting private capital and establishing the credit of the railroad companies, which all seem to agree to be necessary at this time, this provision, in our judgment, by denying constitutional protection to this class of property, by removing from it the reward of success, and by seriously complicating the question of keeping the property up, would repel capital and tend to impair the credit of the railroads generally. Investors will hesitate to go into a business in which, not merely the rates which may be charged are prescribed by law, but the amount saved by good management, thrift, economy and efficiency is to be taken and appropriated for the benefit of others, or for some governmental purpose, to such extent as a government body, in its unlimited discretion, shall deem fair;—a proceeding which, in the common judgment of mankind until now, has been regarded as plain confiscation.

"We have no hesitation in urging the above mentioned view, notwithstanding the apparent support of this provision by some business men and institutions who, we fear, approach the subject too much from the standpoint of bondholders. The problem must be considered from the standpoint of stockholders as well as of bondholders. Bond interest comes before dividends on stock, and a limitation of net earnings ample to provide interest, might still ruin the stockholders; whereas the stockholder cannot protect his holdings without, at the same time, protecting the interests of the bondholder. A limitation on earnings which a bondholder could perhaps regard with equanimity might be destructive of the interests of the stockholders. The limitations provided for in the bill would, in our judgment, effectually defeat the apparent desire of Congress and of railroad economists to finance railroad improvements partially by the sale of stock rather than solely by bonds, since it requires the stockholder to take all the risk of the business, while denying him the right to profits made from reasonable rates, thus making his return uncertain in bad years, and yet little, if any, greater than the return on bonds in good years."

The "Drouth" produced by the federal prohibitory law is given as the reason for an almost complete shrinkage of business at Taylorton, Glenscreek and Labrot, Kentucky, on the Lexington & Eastern branch of the Louisville & Nashville; and the road has asked the State Railroad Commission for authority to discontinue the agencies. The closing of distilleries has reduced business at these points to practically nothing. Objection was filed by E. H. Taylor, Jr., & Sons, who expect that large quantities of whiskey soon will be withdrawn for export.

# Director General Hines Testifies on Coal Situation

## Sees No Cause for Alarm in Shortage as Compared with Full Potential Capacity of Coal Production

WASHINGTON, D. C.

THE RAILROAD ADMINISTRATION expects to be able to transport all the coal that will be needed this year, but it believes the government should find out more accurately what the requirements will be before the failure of the railroads to furnish all the cars the coal operators would like to have is allowed to be taken as a pretext for increasing the price of coal, Director General Hines testified on September 4 before the Senate subcommittee that is investigating the coal situation. Mr. Hines and other representatives of the Railroad Administration also replied to some of the criticism made by representatives of the National Coal Association.

An abstract of Mr. Hines' statement follows:

"Broadly, as I understand the situation, the conditions in the first half of this year have been radically different from the conditions likely to prevail in the second half of the year. For the first six months of this year I don't understand there is any serious contention that a shortage of transportation interfered substantially with the production of coal. The fact was that during that period the car supply and all transportation facilities were, generally speaking, very much in excess of the coal that was produced. While at a specific mine or in a specific district at some period there may have been a transportation disability (and they are likely to arise, and at any time) which may have interfered temporarily with the production of that mine or in that district, I am satisfied it is a correct statement, broadly, that in the first six months of the year the transportation facilities were very much in excess of the coal production and any shortage in production was due to other causes, except in cases which, viewing the total situation, could be regarded as virtually negligible. I understand the principal reason for the smaller production of coal was that the public was not willing to buy the coal; in other words, it was a condition of no market and not a condition of transportation shortage.

"As to the second six months, the public is getting to the point of buying coal and that is bringing into operation to a much larger extent the matter of production disabilities and also transportation disabilities. They will play an important part in the second half of the year, but certainly the transportation disabilities did not play an important part in the first half of the year.

"As I understand it, the purpose of this committee's investigation is to promote the public interest with respect to coal and as I look at that interest it is that there shall be an adequate amount of coal produced and transported and that the public shall be able to get that coal without having to pay an excessive price for it.

"The one of these objects with respect to which I have responsibility is the object of transportation, and I want to explain that the Railroad Administration is doing everything in its power to meet a transportation situation of unusual difficulty. We are not standing on any preconceived notion of what remedies are necessary, but we are reviewing the matter constantly, from day to day, and adopting new methods as they appear desirable; in other words, we are not handling the matter in a routine way in any sense, but with the liveliest appreciation of the importance of the situation and with a constant purpose of utilizing every expedient that can be developed which will help to enable us to transport during the latter part of this year the coal which the public omitted to buy in the early part of the year and

which it will want to buy. We welcome suggestions from every source. We have profited greatly by the comments that have been made in the course of this investigation, and are taking advantage of every practical suggestion. We are proceeding upon the idea which was made clear in my reply to the Senate resolution that it is going to be difficult to transport in the latter half of this year the coal the public will want to buy. We are not awaiting any additional information nor are we concerning ourselves with excuses. We have got a situation and we have got a possibility of a large amount of coal to be transported which will tax the railroad facilities, and we are dealing with it as a practical matter and endeavoring in every possible way to make that transportation come up to the maximum.

### Car Movement Not Slowed Down

"There is one point I would like to emphasize. It is a point I find causes a great deal of confusion in other instances as well as this. The suggestion has been made that the Railroad Administration has been inefficient in the handling of coal because the number of miles per car per day made in the first half of this year was less than was made last year, and that that indicates the cars were not moved at sufficient speed. That factor is exceedingly misleading and I think it is rarely if ever a useful factor. It is obtained by taking the total number of cars on the railroad, multiplying it by the total number of days in the period, and dividing that into the total number of miles. The result is that when there is a reduced volume of transportation so that a great many cars are stored, and so that on account of the absence of congestion the traffic moves at an exceptionally good rate of speed, the average miles per car per day show less than normal, because there is figured into the average a great many cars which are not moved at all. In the first six months of this year traffic of all sorts, generally speaking, was below normal, coal traffic particularly was below normal, and the result was that the number of cars actually being used and actually making miles at all was exceptionally small, and yet when you take into consideration all the cars not moving at all, not in service at all, that pulls down your average. Thus the inference drawn from that factor of average miles per car per day is wrong. As a matter of fact the movement of traffic in the first half of this year was very satisfactory, there was no congestion to interfere with it.

"My motive in this matter is two-fold: in the first place, I have the most lively sense of my obligation to do the very best I can to give the public an adequate service, and in the second place, I am exceedingly anxious to minimize as much as possible any transportation shortage with reference to coal because I am afraid such a shortage is in danger of being made a pretext for increasing the price of coal. From both these standpoints it is the desire of the Railroad Administration to meet this situation in every possible way.

"My reply of August 14 to the Senate resolution calling for certain facts with respect to coal emphasized two points, one of which was the prospect of transportation difficulties for the rest of the year. The reply pointed out that if the estimates of the amount of coal to be consumed in the rest of the year were approximately correct there would be very serious difficulty in transporting the amount of coal transported in the latter part of last year under war conditions

when there were in effect numerous provisions and restrictions which facilitated the transportation of coal and which were not in effect this year. Among these provisions were the zoning of coal which prevailed last year and which accomplished a substantial economy in the use of transportation. With the signing of the armistice that was terminated, being regarded as a war measure, and undoubtedly an important economy in the transportation of coal was necessarily lost, because now coal from practically any part of the country can go to any other part of the country where market conditions admit of its being transported, and the result is that much coal is transported a much longer distance than the corresponding quantity of coal was transported last year. This involves an additional use of all the transportation facilities: cars, locomotives, tracks and terminals, and makes a substantial difference in what can be done. Other important factors were that last year under the war conditions there was less detention of equipment at destination and, through the establishment of certain car pools, the number of cars of coal that had to be held at certain destinations was very much less than was the case in peace times, so that we have a situation where the amount of coal to be transported may come close to what was actually transported last year, and where we will not have the benefit of certain war arrangements which undoubtedly very greatly promoted the transportation of coal last year.

"I also emphasized the danger that these transportation difficulties might be used as a pretext for increasing the prices of coal.

"I want to reiterate both these propositions. My best judgment is, after constantly reviewing this matter, that we are going to be able to transport the necessary coal. We propose to adopt whatever expedients are necessary to accomplish that purpose.

#### Car Shortage Excuse for Higher Prices

"Now, we must all recognize that these transportation difficulties are going to be played up to their full value and probably beyond it. They always have been and I take it they always will be. Every transportation difficulty, either local or general, which will manifest itself between now and December 31, or between then and the end of the coal year next March, is going to be laid before the public, emphasized, exploited and perhaps expanded. Now, that is a practical condition that we have to meet. I mention that not because I object to it, for that is a part of the job of the director general to be made the target of complaints of shortages or defects in transportation wherever they occur in the country. It is a condition that we have to expect but I mention it because of the danger that these transportation difficulties, which are inevitable, will constantly recur throughout this year and will be so emphasized and stressed as to create a public state of mind of impending disaster which will furnish a favorable medium through which to increase the prices. I am apprehensive about that feature that transportation difficulties, which are inevitable, will be so stressed as to put the public in a state of mind where it will stand for increases in prices which it ought not to stand for. Now, that being the situation, the four specific suggestions I want to urge on this committee are these:

"I think it is highly desirable to get the most complete information possible as to the current production of coal, and as to the limitations on current production, either through transportation disabilities, or labor shortage, or absence of market or any other cause. My judgment is that the best way to obtain that is to give the Geological Survey ample funds to enable it to get this information in a complete form, and also to police and check the information in such a way as to be sure that it is accurate. My understanding is that at present the Geological Survey does not get reports from

all the mines, although perhaps it does get reports from the mines producing the great bulk of the traffic. I understand that the Geological Survey has no way to verify the reports which the individual mines may make, or compare them with the reports made by the railroads. The information is available as reported to the railroads, but there is a very considerable amount of clerical work involved in making a comparison of the matter and I understand the Geological Survey is without the clerks and without the funds to make a thorough-going check of that information; so I believe that one thing which would be of very great value to the public, both now and permanently, is the adoption of a definite and permanent policy that some proper agency of the government—and I should think that the Geological Survey would be the best—shall have adequate funds to get complete information on this point from all of the mines and to check that information by comparing it with the information which the railroads have from their standpoint, and on the basis of that to make a report which will be both complete and accurate.

#### An Example of Human Nature

"We cannot get away from the fact that where a mine operator is in doubt as to the cause to which he can properly attribute any failure of his mine to produce the full amount of coal, it is human nature for him to attribute it to a cause for which he is not responsible. I think the tendency always will be that the operator, when the matter is left entirely to his own judgment, will resolve all doubts by charging that shortages of production are due to car shortages. I want to make it clear that I don't claim that any operator would deliberately misrepresent the facts, but where it is a matter involving elements of doubt, it is human nature, if a man is left to his own judgment, to resolve the doubt so as to shift the responsibility. If the Geological Survey had the necessary equipment to make the comparison between the coal operator and the report of the railroad as to what the car shortage amounts to, there would be an important improvement, in my opinion, in the accuracy of the reports, and that is said without any reflection on the honesty of the operators, but simply in recognition of one of the fundamental principles of human nature. I believe that the funds spent for that purpose will be returned manifold to the public in a saving in the price that it will have to pay for coal.

"While referring to a report of the Geological Survey, I would like to point out the fact that the report is on the basis of potential production by the mines. Comparing one week with another this is useful as it shows the trend from one week to another; but if it is to be assumed that the shortages in production indicated by that report correctly represents the actual loss in production, it is a very mistaken assumption.

"For example: These reports which the Geological Survey is making for, I think, about 2,500 operations, are based on a potential capacity which aggregates close to 16,000,000 tons per week. I understand the highest production that has ever been made in a week was only about 13,000,000 tons, and the highest that has been averaged for any considerable period of weeks is only something over 11,000,000 tons, so that this potential production of 16,000,000 tons per week is entirely misleading if we view it from the standpoint that any failure to realize that production in any week represents a loss to the public. If the mines had the facilities—labor, transportation and markets—to operate up to a capacity of 16,000,000 tons per week, that would supply the entire demand of the country for coal in a fraction of the year, and they couldn't run at all for the rest of the year, so that the showing is very misleading as indicating a corresponding real loss in the production of coal for any period stretching over several weeks.

### Information as to Requirements Needed

"Now, the second point that I want to ask the committee to consider is the arranging through some proper governmental agency—and again I think the Geological Survey would be the best one for the purpose—to get an estimate as to what are the actual requirements for coal in the rest of this year, and also between the end of this calendar year and March 31, the end of the coal year. Necessarily the situation is involved in considerable confusion because the conditions have been abnormal in many important respects during this year. As I understand it, we started in with an abnormal amount of coal in storage, so, of course, that took the place of coal which would be produced in this year, to an important extent. We also started in this year with a suspension of activities on the part of a great many industries which were very active last year and which last year were consuming exceptional quantities of coal, so that in the early part of this year especially it seems reasonable to assume that the actual consumption of coal was considerably below normal in many important lines of business. We also had a situation where we had the mildest winter that has ever been known in the history of the country, and the preceding winter was the most severe that the country has ever known, so presumably the domestic consumption of coal in the early part of this year was very much less than the domestic consumption of coal in the early part of the preceding year, and in many part of the country bituminous is the only coal that is used for domestic as well as other purposes.

"Even now conditions are not normal. We are uncertain as to what the prospects are for the rest of the year as to coal consumption in this country, as to coal to be exported, so we have a situation in which it is peculiarly difficult to make a satisfactory estimate of the coal which must actually be produced in order to meet the requirements of the country. Now, so long as that is a very uncertain element, there is danger that the amount of coal which will be needed may be exaggerated, so that my second suggestion is that the committee arrange, through a proper governmental agency, to get an estimate—of course, as accurate as possible—as to what will be the actual total requirements for the rest of this year, taking into consideration, of course, the rather small production in the early part of the year and the amount of storage on hand. In that connection I want to call attention to a point in my reply to the Senate resolution. I stated that in the first six months of this calendar year the railroads had consumed 26,000,000 tons less of coal than they had in the corresponding six months of last year. I discovered a day or two ago that that 26,000,000 tons was an estimate applying for the 12 months, and the actual extent to which the consumption of railroad coal in the first six months of this year fell below the consumption by the railroads of coal in the first six months of last year was 13,764,000 tons instead of 26,000,000 which I gave, which was the estimated amount for the entire year.

"Now another point which I think would be very useful would be for the committee to get information as to the prices both at the mines and to the consumers. It seems to me that we haven't any very satisfactory light on that subject, and I should think it would be a very useful matter for the public to know the prices at the mines, the cost of distribution between the mines and the consumer, and what has been the progress of those prices and how they compare with the government maximum prices which prevailed last year. My understanding was that these government maximum prices were fixed on the theory that they ought to be high enough to encourage production by many of the high cost mines because the total to be produced during the year had to be an abnormally large figure, and it would be of interest to know how the prices actually charged this year have compared with these government maximum prices which, in

my judgment, were fixed on a high basis for the avowed purpose of encouraging during the year an abnormal production of coal so as to enable the high cost mines to produce coal freely.

"The fourth point I have in mind is with reference to transportation difficulties. My judgment is that we will overcome them to the extent of transporting the coal which the country needs, but these difficulties will be manifesting themselves all during the year. There will be a most favorable opportunity for stressing those transportation difficulties, creating the impression that there is going to be a serious shortage of coal, and, therefore, that coal had better be bought at a higher price rather than take the chance of waiting. I think, therefore, that we are in danger of having a state of mind created in which prices may be substantially increased.

"A coal operator may have a contract at prices fixed early in the year and if this state of panic develops on the part of the public he might get bids for coal at a much higher price. There will be a very strong temptation on his part to fill the orders which he can get at the higher prices and omit filling the orders to which he is already committed on the lower prices. This will tend to complicate a difficult situation. My thought is there ought to be an extension of the powers which the government had during the war under the Lever act to deal with problems of this sort. I think it would be a perfectly just exercise of the war power passed by Congress. The very fact that the weapon existed would go far to make it unnecessary to use it, and the government ought to be fortified by having an adequate power to deal with it.

"Now, I want to refer to one other matter which has been touched upon here, and that is as to the policy of the Railroad Administration with reference to the purchase of its own coal. Last January, I think it was, the question was raised whether the Railroad Administration would not fix a uniform price for coal in the various districts and buy coal at that price, apportioning its purchases among the various mines which were able to furnish the proper quality of coal. The disposition of the Railroad Administration was to ask for bids for this coal. That was the settled policy of the government, to secure the benefit of competitive bids wherever it was possible. The government had practically always been committed to that policy, but it was suspended during the war period. The representatives of the National Coal Association urged very strongly that we adopt the other policy—the fixing of prices and apportioning the coal. I gave the matter very careful consideration, and I felt it would not be justified for the Railroad Administration to assume that responsibility. The moment the Railroad Administration assumed the responsibility for fixing the price for coal it would have been charged with any failure of that price to meet the expectations of the operators and the employees, it would have had to fix the price high enough to cover a good many high cost operations, and a price so high as to probably be a very excessive price to many operators with low cost of operation. I felt that I ought to resort to the settled government policy of asking for competitive bids for coal, so I took special precautions to avoid the difficulties which it would be pointed out would arise if competitive bids were asked for.

### Purchasing Policy

"Therefore we adopted the rule that the purchasing agent of each railroad would buy his own coal, and not through a central agency of the government. Each purchasing agent asked for bids from mines in the part of the country supplying his railroad and dealt with the matter separately. We also adopted the rule that we would not accept any bid unless the operator certified that the price was sufficient to

maintain the present wage schedule or scale and we maintained that policy. In one instance an operator made a bid and stated that it was not sufficient for that purpose and the bid was rejected. We also adopted the policy of making our contracts public. It was urged that unless that was done some operators might make unreasonably low bids to get a status in furnishing railroad coal which would be injurious to the employees and injurious to their operators, so we made the contracts public. We endeavored to adopt the most considerate policy to offset the objections that were urged by the National Coal Association.

"Now, I would be very glad indeed to see an investigation on that point, how much profit the operators made last year and this year, and just how they arrived at it. I don't believe there is a single exception where any operator made the price to the Railroad Administration so low that it would serve as a plausible pretext to increase the price to anybody else. My own judgment is that what reductions were made in price were only such as it would be perfectly natural for a customer who was purchasing throughout the year.

"Prior to the war the railroad companies used as a consideration of their coal contracts the factor that they would guarantee 100 per cent car supply for the railroad coal, and, of course, that was a very important consideration, because the operator furnishing railroad coal could be assured that he could supply them coal even in times of acute car shortage.

"From the railroad standpoint there were valid reasons for that because, after all, the railroad had to run. It had to have this coal if nothing else could be transported; but after that was thoroughly reviewed last year the conclusion reached was that the railroads ought not to use that as a factor in their coal contracts so that guarantee was dropped out. As a result, it was arranged that the Fuel Administration would see that the railroads got all the coal that they needed to run the railroads. I believe reference has been made here to the fact that there was a 10 cent reduction in the price of coal on account of that arrangement, but it is also true on account of that arrangement that the railroads paid a considerably higher price for coal than they had been paying before.

"In many instances the railroads had quite a large stock of coal in storage at the beginning of the year and, of course, there was a natural temptation to use that coal, but it was strongly represented to us that the mine labor situation was very serious because there was such a sudden and serious cessation in the demands for coal that many mines had to remain closed so much of the time that the employees could not earn enough wages to live on, and in consideration of that fact we adopted a definite policy to not consume our storage coal as rapidly as we would normally have done, and we held that coal in storage to a greater extent than usual and therefore bought more coal than we would have bought if we had used up our storage coal, as the general public seemed to be using up their storage coal. I am advised by our Division of Purchases that on July 1 of this year we had about 12,500,000 tons of coal in storage, which is about 3,000,000 tons more than we had in storage when the government took over the railroads on January 1, 1918.

"It is important to bear in mind the further consideration that the present plan is for the railroads to be returned to private control on December 31 next. If the Railroad Administration buys coal and keeps it in storage and turns back the coal to the railroads on December 31 in excess of the amount which the Railroad Administration got from the railroads at the beginning of federal control, the result will be that the government will be tying its money up in coal for the benefit of the railroad companies. The substance of our contracts is that we will turn back the same

amount of materials that we received, but if we turn back an excess amount the result is that the government is tying up its money in this excess amount of material and this will mean that the government will simply carry the obligation of the railroad company to repay it. The financial situation of the Railroad Administration has been such that I am satisfied we cannot afford to tie up any money in railroad materials and supplies in excess of what the contracts call for because Congress has been reluctant to make appropriations necessary to meet the situation which exists and we certainly could not make that situation more difficult by tying up government money unnecessarily.

"In conclusion I want to emphasize again that as to the transportation aspect of this matter we are doing everything that we can to meet the situation which has been brought about. We welcome advice from all sources and we stand prepared to give the committee any facts that it thinks it may need, and aside from that I urge on the committee the adoption of the specific recommendations I have made so as to put the public in possession of the facts which will be a protection to the public, and so as to give the government the control which will enable it to protect the public if the need for that protection arises."

### Gutheim Discusses Car Supply

A. G. Gutheim, assistant manager of the Car Service Section, and Frank McManamy, assistant director of the Division of Operation, of the Railroad Administration, also testified last week before the committee and replied to some of the statements made by representatives of the National Coal Association attributing the deficiency in coal production mainly to car shortage and failure to repair cars.

Mr. Gutheim expressed some doubt as to whether a production of 500,000,000 tons of bituminous will be required this year as stated by the coal association on an estimate made by Dr. Garfield. The production last year was 585,000,000, but in 1916, when the industries of the country were running full tilt, which they are not doing now, he said 500,000,000 tons was sufficient. However, Mr. Gutheim said, it is the job of the Railroad Administration to transport all the coal needed by the consumers, whatever that may be, but not necessarily all that the coal operators have orders for because in times of coal or car shortage it is a common practice to place orders with two or three operators for the same tonnage in the hope of getting part of it. On the basis of the reports of the Geological Survey showing percentage of output lost on account of car shortage the potential capacity of the mines is about 850,000,000 tons and it is not necessary for them to work anything like full time to get out the production required. There will always be time lost on account of car shortage, labor shortage, no market, mine disability and other disabilities, Mr. Gutheim said, and it will still be possible to get out all the coal the country needs.

Mr. Gutheim took the position, however, that the thing to do is to find out what the requirement will be and then do what is necessary to get it. He suggested that the Railroad Administration might be able to help in getting a rough estimate, but Congress had not allowed the appropriation asked by the Geological Survey for this purpose. "If we have got a war time job," he said, "we ought to appreciate that we will need war time methods, and if the railroads are to put in war time methods the coal operators should consider seriously if they can assist by putting in theirs." He referred to the emergency measures adopted last year which made it possible to get out a record production of coal, such as the preferential car supply, high demurrage rate, zone system to avoid cross-hauling, pooling of various grades of coal and regulation to see that one consumer did not get what ought to

have been distributed among others. If the railroads are to be asked to handle an unusually large tonnage in the last part of the year the coal people should consent to some of these emergency measures," he urged.

Senator Frelinghuysen, chairman of the investigating committee, asked if preference could not be given to coal for a time. Mr. Gutheim said it could but the result would be that the complaints now made by the coal operators would merely be superseded by complaints from others and that last year there was a special reason for giving preference to coal.

John Callahan, traffic manager of the National Coal Association, had spoken of the large number of cars tied up in the transportation of slag, a large part of which, he said, was allowed to stay in the cars all winter and freeze up. Mr. Gutheim said that it was absolutely necessary in a territory like the Pittsburgh or Youngstown districts to transport slag, burnt molding sand and ashes in order to get them out of the way, but he had no information as to the claim of unusual delay in handling these cars.

### McManamy Describes Bad Order Car Situation

Mr. McManamy discussed the bad order car situation, saying the number of such cars is high at present but that the action which was taken by the Railroad Administration two months ago and which is still being diligently followed will, in his opinion, be sufficient to meet the demand for coal cars unless it reaches abnormal proportions, in which event the difficulty will be due not so much to car shortage as to the terminal facilities.

In July, 1918, Mr. McManamy said, 14.9 per cent of the locomotives were out of service for repairs and 798 were stored in serviceable condition. In January, 1919, there were 16.9 per cent out of service for repairs and 1,582 stored; in April, 18.4 per cent were out of service and 4,604 stored; in July, 17.9 per cent were out of service and 3,668 stored. Therefore, he said, the general condition of the locomotives today is better than at any time during federal operation or during the three years before and there is no ground for apprehension. There will be sufficient motive power to handle all the business offered to the maximum capacity of the terminals.

With respect to freight cars, Mr. McManamy said, the situation is somewhat different. On July 1, 1918, there were 167,403 bad order cars, or 7.1 per cent. The force of shopmen was then at its maximum and was working 70 hours a week. In December the number of bad order cars had been reduced to 130,506, or 5.4 per cent. After the armistice the hours were reduced from 10 a day for 7 days a week to 9 hours and 6 days a week and on December 9 to 8 hours a day. This was fully justified, he said, by the prospective decrease in business and was necessary both because of the severe strain under which the employees had been working and because of the importance of reducing maintenance costs by reducing the amounts paid for punitive overtime. The decrease in business was sufficient to make it possible to maintain the low percentage of bad order cars up to March, at which time it was 5.2 per cent, which for the country at large, Mr. McManamy said, is an almost ideal condition. The necessity for further economy on account of expenditures for maintenance of equipment as compared with the test period made it seem advisable to make further reductions in car department forces and this was done by furloughing men at many points and by further reducing the car department hours. As a result the number of bad order cars began to increase in April and until it reached 8.7 per cent in July, a total of 215,953.

With the increase in business the shop forces were increased, first by increasing the work on the box cars to meet

the early grain movement, and before the grain movement became heavy sufficient cars were provided to handle it as promptly as elevator capacity and terminal facilities would permit. Meanwhile, Mr. McManamy said, the low coal shipments could not be charged to the Railroad Administration because they were due to no market. Anticipating an increase in production the Railroad Administration on June 19 issued instructions to increase car repair forces and this was followed on June 27 by instructions that wherever the demand for coal cars made it necessary cars requiring light repairs should be given preferential attention. This was followed on August 16 by instructions to increase the hours of the car department forces to nine a day on all roads where the number of bad order cars was sufficient to keep the men profitably employed or where work could be furnished from connecting lines without excessive empty mileage, also to give special attention to grain cars, coal cars and refrigerator cars in sections where they would be most needed.

This action was begun, Mr. McManamy said, at a time when the loss of coal capacity was 41.4 per cent, of which 26.2 was on account of no market and but 3 per cent on account of car shortage. The effect had already become apparent in a reduction of 8,414 in the number of bad order cars and of 5,741 in the number of bad order coal cars. The number of employees was increased about 8,000 and their hours to nine a day, making an increase of 12½ to 15 per cent in the number of hours worked.

"The increase in bad order cars," Mr. McManamy continued, "is not at all due to a slowing up of the repair program. It is to a substantial extent due to the fact that since the close of the war the railroads are endeavoring to get their cars in better condition and are therefore sending cars to the repair tracks which at any time in the past four years would have been continued in service without repairs. They are also holding cars for heavy repairs which at any time in the past four years would have been put in service with comparatively light repairs and which, if the demand for cars becomes sufficiently urgent, can again be returned to service with comparatively light repairs."

"The strike also interfered seriously with the car repair program, but I think we can reduce the number of bad order cars very substantially in the next two months unless we have some unforeseen labor troubles—and I do not look for them."

Mr. McManamy also testified that 68,598 of the 100,000 cars ordered by the Railroad Administration have been built, of which 51,428 are in service and 17,170 in storage waiting to be stencilled, which is being done at the rate of 700 a day. The balance of about 31,400 cars is being turned out at the rate of 220 per day and includes 10,658 double sheath box cars, 12,075 single sheath box cars, 3,562 50-ton gondolas, 949 hoppers, 1,826 low side gondolas and 2,332 70-ton hoppers.

C. E. Leshner, in charge of mineral fuel statistics of the Geological Survey, testified that at the present time the reason for the shortage of coal production is transportation disability but that if consumers had bought coal for next winter in the Spring, when the transportation was there, they would not now be facing that condition. "They are asking for it all in a bunch," he said. He also said that if there were always a full supply of cars and the labor worked five and one-half days a week, the country could not absorb the output of coal.

F. S. Peabody, formerly chairman of the committee on coal production of the Council of National Defense, denied that unduly high prices are being charged for coal and said that legislation calculated to affect the law of supply and demand would not remedy the coal problem. He said there is no probability of a coal shortage this winter unless deliveries are held up by a shortage of cars or by labor troubles.

## Government Ownership and the Labor Situation on French Railroads

By a French Correspondent

**A**S IN ALL COUNTRIES, the question of government ownership of railroads is one which is being much discussed in France at the present time. Most of the leaders of the various labor unions are using government ownership of railroads as one of the principal planks of their platform, but as a matter of fact there is great indifference with regard to this matter among the employees themselves. The latter are particularly interested in the application of the eight-hour law for their daily work, in being represented on the boards controlling disciplinary action, and in obtaining higher wages corresponding more nearly with the present high cost of living. If the employees gain these points they care little as to whether the railroads are owned by the government or by private companies. The following are the four main advantages which the advocates of government ownership believe will be obtained by applying this policy to all railroads in France: Uniform scale of wages; uniform scale of rates; abolition of territorial or zone limits between railroads with uniformity of equipment, and a uniform system of signals.

The questions are now being studied by all the railroads, and in a few months' time the first two will probably be settled. When these absolutely essential reforms have been adopted, the main advantages to be obtained by government ownership will already have been attained, and the strongest reasons for adopting that policy will no longer exist.

It must be said, however, that in a way this question will essentially settle itself some years hence. In France the different railroad companies were given "concessions" or grants for 99 years, and these all expire during the years 1958, 1959 and 1960. At that time the railroads will automatically be turned over to the government. It is very probable, however, that the government will take them over under very different conditions from those already established with regard to its administration of the French State Railway System. It is likely that the directors and personnel existing on the various railroads at that time will be kept, and that the directors will be given much greater freedom and power of initiative than is the case at the present time with the State Railways.

Fortunately the expiration of the grants for these railroads will not take place for 40 years. It would have been most unfortunate had this come about at the present time or even in the immediate future, on account of the very unsettled conditions in France resulting from the war. The whole organization of France is now so greatly upset by this tremendous upheaval, and there are so many disturbing labor questions being agitated, that it would have been almost impossible to have calmly and wisely studied the methods to be adopted by the government for operating the railroads under its ownership.

The case of the State Railways, owned and operated by the government, can be taken as an example of the actual effects of government ownership in France. It may be said that this experience has shown, so far, great disadvantages and no advantages. The managers of the railroad have had more difficulties to cope with in running the railroad and they have not obtained equivalent results as regards earnings when compared with the privately owned roads. The employees are not as well taken care of and have not the same opportunity for rapid advancement when they show ability as when the railroad was owned by a private company. A large number of these employees have become dissatisfied and have left the State Railways to take up other government positions. Men very rarely leave the privately owned French railroads.

Take the Paris-Lyons-Mediterranean for instance: Out of the 80,000 employees, not more than 2,000 or 3,000 leave yearly. Of these, the great majority are dropped from the rolls on account of death, sickness, or old age, and very few because they voluntarily wish to change their business. In this connection it is a rather interesting fact that as a rule railroad employees in France are married men. It is a great exception to find an unmarried man in the employ of the railroads at stations. The employees take up their work with the companies in a certain locality, bring their families, settle down and end up usually by spending their lives there. In France one does not find the thousands of employees, as in America, who try railroading for a time and then move on and try something else. Almost all the employees are, therefore, men who remain and who work year in and year out for the same railroad.

There is no idleness among the regular employees on account of changes in the volume of traffic at different periods of the year. This traffic, of course, varies according to the season. For instance in the autumn there is a big coal traffic. In the late winter there is a tremendous movement of fertilizers to different regions of the country. In the spring vast quantities of early vegetables have to be shipped; later come the fruit crops and then the wine. Of course, the passenger traffic of the different regions varies also with the seasons.

These changes in the volume of traffic are handled in the following way. In each region, when the traffic is at its maximum, two methods are employed: The first is to send employees, with their consent, from a part of the railroad where the traffic is light to the regions where it is heavy. The second is to employ temporary workmen, drawn from the region in which they are needed. These men are almost invariably farm laborers, and as France is a great agricultural country, they can always be readily obtained, except during the harvest season. These men are known to the station masters in the different localities, and the same ones are used from year to year. This method works out splendidly as it not only furnishes additional employees for the railroads during the periods of stress, but it also eliminates idleness among the farm hands at times when they otherwise would have no work.

All of the railroad companies in France have done a great deal to try to improve the living conditions of their employees. In order to permit the employees to obtain, at low rates, foodstuffs and the first necessities, such as shoes, co-operative stores and "économats" have been established. In the co-operative stores the employees themselves control the entire organization and direction, but the railroad companies try to facilitate their work in every way possible. In the case of the "économats", or company stores, the railroad companies control the organization and direction. This latter method is that employed on the Paris-Orleans. Canteens have also been established. Thanks to these stores and canteens, the employees are able to purchase foodstuffs and the first necessities at cost price.

The railroad companies have also built colonies of wooden houses for their married employees. The Paris-Lyons & Mediterranean, for example, has bought American army barracks to the value of 2,000,000 francs for this purpose. This also encourages the unmarried men to get married, for they often experience great difficulty in finding lodgings when they are single.

With regard to technical schools for railroad employees, France is far behind the United States. France has some of the finest first-class technical schools in the world, such as the School of Mines, and the School of Bridges and Highways, but she had not had good secondary technical schools. New workmen in the railroads are generally sons of present employees, and they work in small groups in the different

shops, learning their trade under an apprenticeship system. For this they are paid two or three francs a day. This lack of good secondary semi-technical schools for railroad apprentices is very unfortunate, and the more progressive managers of the railroads are planning to study American schools of this kind in order to institute a similar system in France.

The common objection of ignorant workmen to modern and up-to-date machinery exists to a great extent in France, but the managers of the railroads are disregarding this and are gradually installing modern machinery and methods everywhere. In cases where the number of men is reduced for this reason, these employees are not discharged, but are used elsewhere.

The above brief description will show the general methods of handling employees on the French railroads and the prevailing views concerning government ownership. Although conditions, in many ways, are not the same in France as in America with regard to railroad operation, much can be learned by the railroad men of each country by studying what is being done in the other country. The Americans who co-operated with the French during the war in railroad work realized that there was much to learn in France, and the Frenchmen through the contact with these Americans have become tremendously interested in modern American railroad methods, such as train despatching and block signaling.

A great many of the leading French railroad men are planning to visit America shortly—among others Monsieur Claveille, Minister of Public Works—and it is certain that American railroad men will take great pleasure in giving them every chance to study our railroads and their methods.

According to a report on traffic conditions for the week ended August 25, while the recent railroad labor disturbances have subsided in nearly all the regions throughout the country, the movement of commodities, with few exceptions, has not kept pace with the corresponding period of last year. In the Allegheny region, for the week ended August 25, revenue freight handled decreased 8,012 cars, compared to the same period last year. In the Pocahontas region, as compared with the week ended August 25, 1918, tidewater coal dumped decreased 22.7 per cent.; other coal decreased 8 per cent.; commercial freight decreased 12 per cent. and loads received from connections decreased 23 per cent. Figures from the Northwestern region show a decrease of approximately 41,000 car loadings for August 25, 1919, as against the corresponding period for 1918. In the Central Western region, some improvement was noted. For the week ended August 19, 1919, grain loadings increased 15 per cent., over the same week for 1918, live stock increased 22 per cent., and lumber increased 16 per cent.

Patriotism, local pride and just common selfishness all say: "Buy War Savings Stamps and Thrift Stamps."

## E. B. Thomas

**E**BEN BRIGGS THOMAS, chairman of the board of directors of the Lehigh Valley, and one of the best known railroad men in America, died at his home in Morristown, N. J., on September 4, at the age of 80. Mr. Thomas had made his mark as an executive officer on four prominent railroads, and was as notable for his knowledge of operating details and his sympathetic interest in the men in the ranks as he was for his efficiency as a financier and his ability in the whole broad field; and yet, strictly speaking, he was not brought up as a railroader; he was a business man of ability and considerable experience before he entered the railroad field.

As a railroad officer he belonged to the old school; devoted with decided singleness of purpose to his immediate tasks and too busy and too modest to advertise himself; but he became prominent through his activities in the American

Railroad Association, of which, in its earlier and stronger days, he was one of the leading spirits; and he became popular among railroad officers throughout the country in spite of his modesty; or rather because of his engaging personality, his freedom from all useless frills and the good judgment by which he habitually went to the heart of every question.

He was born in Cleveland, Ohio, in 1839, the son of a clergyman. His early training was in the office of the Otis Steel Company, of which firm he became a member. In 1870 he was appointed receiver of the Lake Shore & Tuscarawas Valley, now a part of the Baltimore & Ohio, and in that position made so good a record that he was chosen general manager of the Cleveland, Columbus, Cincinnati & Indianapolis. Here he remained until 1885 and here he made his reputation as an operating officer. From 1885 to 1888 he was second vice-president and general manager of the Rich-

mond & Danville, which was the nucleus of the present Southern Railway System. After three years in the south, he was called to the New York, Lake Erie & Western as second vice-president and after a few months was called to New York City as chief operating officer of all the lines of the company. On December 1, 1890, he was made first vice-president. He was promoted to the office of president in 1894 and when the receivership was ordered he was appointed one of the receivers. In November, 1895, when the company was reorganized he was made president of the new Erie Railroad Company. Six years later he was made chairman of the board of directors. In 1902 left the Erie to become president of the Lehigh Valley. This office he held for 14 years, and on February 21, 1917, was elected chairman of the board, being succeeded as president by E. E. Loomis.

Mr. Thomas' administration of the Lehigh Valley was marked by the development of the road from a condition near bankruptcy to that of a sound and prosperous concern.



E. B. Thomas

The mileage of the road increased but little, but the gross receipts rose from \$24,000,000 to \$47,000,000, and the surplus available for dividends to a sum equal to more than twelve per cent on the common stock. A prominent feature of his administration was his intelligent adherence to high standards of engineering practice, both in roadway and equipment. He was not an engineer, but, like Mr. Carnegie, he exercised unerring judgment in availing himself of the work of other men.

## Railroad Hearings Before House Committee

THE HOUSE COMMITTEE on interstate and foreign commerce expects to complete its hearings on railroad legislation by the first part of next week, after having held almost daily sessions since July 15. It has already heard most of the proposed plans for railroad regulation and this week has been hearing various witnesses who have proposed amendments to the Esch-Pomerene bill.

On September 5 a delegation of colored people representing the Colored American Council appeared before the committee, introduced by Representative Madden of Illinois urging legislation to require the railroads to furnish equal accommodations and service, regardless of race, in interstate traffic. The witnesses did not object so much to the separation of the races as provided by the "Jim Crow laws" of the southern states but based their argument principally on the inadequacy and unsanitary condition of the facilities provided for colored passengers to show that they are discriminated against in many ways. It was said to be almost impossible for a negro to obtain Pullman accommodations in the south and very difficult to get anything to eat while travelling because they are not allowed in the dining cars and many station eating houses have no provision for them. The Jim Crow car, it was testified, is usually only half a baggage car, in a very filthy condition and very much overcrowded. The witnesses presented elaborate and carefully prepared arguments in support of their claim of discrimination together with a large amount of data regarding the conditions of the facilities provided for colored passengers.

A number of representatives of water lines have been before the committee to oppose the provisions of the Esch-Pomerene bill giving the Interstate Commerce Commission jurisdiction over port-to-port rates. Among these have been W. P. Levis, freight traffic manager of the Clyde and Mallory lines, who said the steamship business would not lend itself to the regulation prescribed for rail carriers, as the conditions under which they operate are very much different. Thaddeus H. Swank, of counsel for the Merchants' & Miners' Transportation Company, submitted a statement by A. D. Stebbins, president and general manager of the company. Frank A. Law, of counsel for the Alaska Steamship Company, and John H. Bunch, general freight and passenger agent of the company, protested both against giving the commission jurisdiction over port-to-port rates and against including Alaska in the provisions of the bill.

F. B. McKinnon, president of the United States Independent Telephone Association, F. C. Stevens, counsel for the association, and N. C. Kingsbury, vice-president of the American Telephone & Telegraph Company, asked the elimination from the bill of the provisions which would bring the telephone and telegraph systems within the full regulatory powers of the Interstate Commerce Commission.

B. B. Cain, representing the American Short Line Railroad Association, asked a government guaranty of operating expenses to the short lines which have not been paid the standard return, for the period immediately following the expiration of federal control. He also offered a proposed amendment to protect existing rates during the period of

readjustment. L. S. Cass, president of the Waterloo Cedar Falls & Northern, asked that the Interstate Commerce Commission have jurisdiction over the routing of traffic.

Earl H. Morton, president of the Order of Railroad Station Agents, which has a membership of about 6,500, told the committee that the Plumb plan is "the best plan ever devised to drive brains out of the railroad business." "The plan is so preposterous," he said, "that it would not merit serious discussion but for the fact that the so-called Plumb Plan League seems to be securing the support of large numbers of railroad employees who have not really informed themselves as to what the plan is and the way in which it would actually work. Its adoption would destroy efficient operation, cause tremendous rate increases or a deficit to be paid by the public, and wreck the rail systems physically and financially."

J. G. Luhrs, president of the American Train Despatchers' Association, appeared before the committee on September 10, urging legislation to continue the effect of General Order No. 8, issued by Director General McAdoo last year, which prohibits discrimination against any employee because of membership or non-membership in a labor organization. He said the despatchers were already hearing threats that they would have to choose between their jobs and their organization after the roads are returned to private management. He said, however, that his organization had made little headway against the Railroad Administration as compared with the influence exerted by the larger organizations of employees, and mentioned a case where both the despatcher and the train crew had been discharged for allowing a train to run into a terminal 50 minutes ahead of schedule but the members of the crew had been reinstated through the influence of their organizations.

Senator Lenroot of Wisconsin appeared before the committee in support of the Amster plan, which has been incorporated in a bill which the Senator has introduced providing for unification of the roads into a single system, with minimum earnings guaranteed and privately owned but managed by a board representing shippers, farmers, security owners, employees and the public. He opposed various plans which seek to preserve competition and said the public is only interested in the most efficient operation and reasonable rates, which he argued cannot be obtained under separate managements some of which are likely to repeat the examples of financial manipulation which have furnished scandals in the case of the Rock Island and the New Haven. Senator Lenroot said that physical property should not be taken as the sole criterion of value and that a capitalization of earnings would not be justified because some roads "because of a lack of exercise of regulating power" are earning too much. His plan proposes a valuation based on the three elements of original investment, cost of reproduction and earning power. He suggested that while men cannot be required to work against their will it might be possible to provide that strikers shall not be taken back after a strike at a higher wage than that determined by a tribunal.

Representative Winslow asked several questions suggesting some kind of regulation of labor organizations to make them responsible. Under present conditions, he said, the committees of Congress do not hear from the great body of working men but only from their leaders and never know whether or not they are properly representing the views of the men. On his last trip home, he said, he had taken occasion to question as many railroad employees as possible regarding the various propositions brought to Washington in their name but had found them rather indifferent. A majority of those he had talked with said they knew very little about the Plumb plan and others said they wished the present agitation was over so they could settle down to work. Most of them seemed to have so much money that their principal grievance as to wages was because someone else was getting more.

# Concrete Packing Stops Settlement Over Tunnel

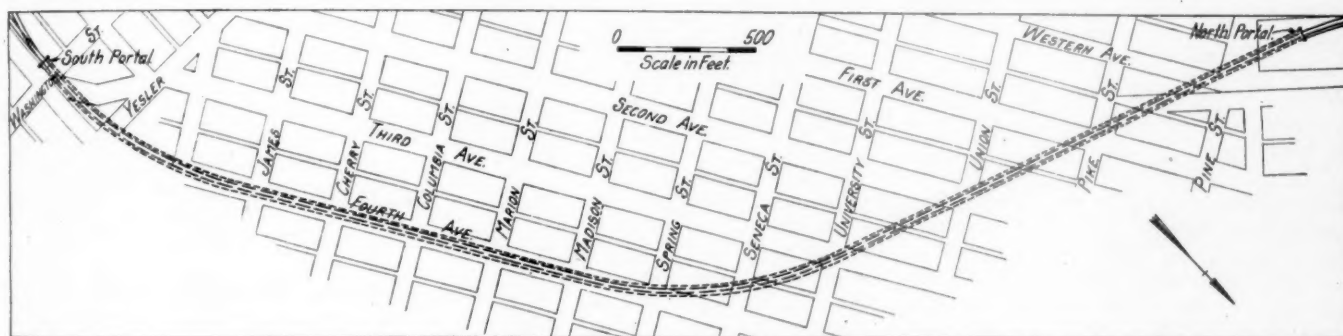
Change in Sub-surface Drainage Conditions Causes Decay of  
Timber Lagging, Requiring Its Replacement

By E. E. Adams,

Assistant Engineer, Great Northern, Seattle Wash.

**T**HE TRACKS OF THE GREAT NORTHERN and the Northern Pacific enter the Seattle terminals from the north through a double track, concrete-lined tunnel, 30 ft. between the side walls, 26.8 ft. high from the top of rail to the crown of the arch, and 5,141.5 ft. long. The south portal is located near the intersection of Fourth Avenue South and Washington street from which point the tunnel runs northerly until it becomes coincident with the center line of Fourth avenue just south of James street. From this point it follows the center line of Fourth avenue for a distance of 1,360 ft. to the north margin of Madison street, thence curving to the northwest, passing under the cross streets, Third avenue, Second avenue, First avenue and Pike Place,

sisted of deposits of glacial drift of irregular lenses of hard blue clay, sand, cemented gravel and hard pan. During the removal of the earth more or less water was encountered, but not serious enough to cause any particularly difficult or expensive work. The sandy materials as a rule were water bearing and sometimes the clay had cleavage planes which indicated water. The area influenced by the drainage along the tunnel route was more or less uncertain. It may have extended some distance from the tunnel bore and in unexpected directions. It was a fact that large quantities of water were not encountered, but it was known positively that moisture did exist and it seemed to be the opinion of the engineers that the heavy timbering in the section of the tunnel



Location of the Great Northern Tunnel Under Seattle's Business District

to the northerly portal, which is located about 180 ft. south of the south margin of Virginia street, just east of Railroad avenue, on the Seattle water front. The tunnel lies beneath the heart of the retail district of the city, as is shown in Fig. 1.

## Limited Amount of Moisture Present Originally

The topographical features of Seattle are most unusual, and in order to develop the railway terminals, a site was selected some years ago on the unfilled tide lands at the foot of Beacon Hill. In order to gain access to the terminal which was to be occupied jointly by the Great Northern and the Northern Pacific, it was decided to bore through the hill on which the city was situated and thus escape congestion in the rapidly growing water front district.

The excavation for the tunnel bore was started from the north and the south portals in May, 1903, and the advance drifts met on October 26, 1914. The excavation bore was approximately 40 ft. wide and 30 ft. high, and all excavation throughout the entire length was carried out by the old tunnel method of excavating for advance drifts, headings and side pockets with timber lagging.

The timber section of the tunnel followed the excavation and at points where overbreak occurred the void was packed solidly with slab wood and square timber recovered from the false work used during the excavation. The concrete lining was then constructed within the timber section proper as shown in Fig. 2.

The excavated material along the route of the tunnel con-

would be preserved and permanently maintained after being encased outside with the concrete lining.

The construction work on the tunnel progressed rapidly after the advance drifts had met in 1904 and in April, 1905, double tracks were laid through the tunnel and traffic was handled direct to the terminals at the south end of the city.

## Re-grading and Street Improvements Change Drainage

From 1906 until 1909 the grades and elevations of the cross streets and thoroughfares along the route of the tunnel were greatly changed and modified for street traffic by an elaborate and expensive system of regrades that the city had undertaken, the principal street changes in the vicinity of the tunnel being along Third, Fourth, Fifth and Sixth avenues, with the cross streets lying between Yesler Way near the south portal of the tunnel, and Pike street near the north portal of the tunnel. The regrade of Fourth avenue was completed in 1909 and this thoroughfare and others crossing the tunnel were paved with material which greatly changed the drainage conditions.

In addition the city also laid extensive sewer systems and, together with the reconstruction of paved street car track areas, the heavy annual rain fall and surface waters were disposed of in an entirely different manner than before the regrades were undertaken. By bettering the drainage conditions to this extent, all of the surface waters and others which formerly penetrated into the soil and kept it in more or less of a moist condition, undoubtedly caused a drying out of the soil and contributed very largely to the decay and dis-

integration of the timber section of the tunnel and the packing over it.

### Settlement Appears

In January, 1911, the street pavement and car tracks along Fourth avenue and above the tunnel showed signs of subsidence—not to any great extent—but the fact that slight settlement had occurred along the tunnel route, constituted such presumptive evidence, that after careful investigations and discussions, the railway company's engineers established an elaborate system of bench marks over the streets, buildings and structures from the north to the south portals of the tunnel zone. The greatest indication of subsidence was first noticed at the intersection of Fourth Avenue South and Prefontaine Place. This open street area is immediately above the tunnel and within 100 ft. of the south portal. Traffic conditions at this intersection were most severe and heavy, two street car lines forming a junction, and team and automobile traffic meeting at five corners. The settlement at this point was not heavy. The car tracks made slight, easy depressions and the drainage on the paved streets was not seriously interfered with, nor were there any unusual complaints in regard to the public utilities situated in the street proper.

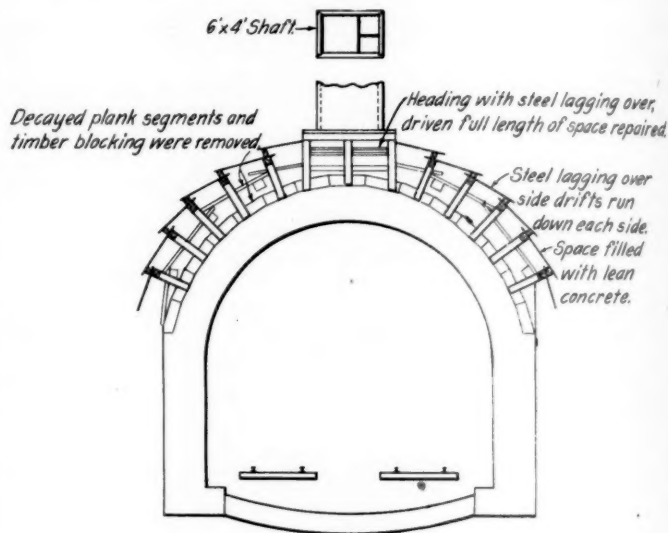
Insomuch as there was such reasonable evidence of settlement, and regardless of the precise elements producing the subsidence and due to the principal fact that the tunnel angled directly under the zone of settlement, the railroad company took the initiative to ascertain the exact cause of the trouble.

The ground covering over the concrete lining at this location was not over 12 ft. deep, it was therefore not considered advisable to tap the arch of the tunnel and explore above the arch, but to sink a shaft and undermine the street area and thus maintain railway traffic through the tunnel and street traffic above it during the period of examination, which later developed into an extensive repair job. A shaft was sunk on a piece of vacant property and the undermining process was undertaken with a view to removing the timber

observed, finally resulted in a definite policy on the part of these engineers to adopt a program of making extensive repairs and improvements along the entire arch of the tunnel.

### Method of Backfilling Tunnel

The method as finally adopted (Fig. 3) consisted in sinking shafts at convenient places either directly above the tunnel or located in whatever vacant space could be conveniently secured, or in sections of alleys or streets where traffic was light, and the underground work could be carried on with little or no interruptions. The shafts were usually 4 ft. by 6 ft. in size and were sunk to the level of the highest point on the tunnel arch, where advance drifts

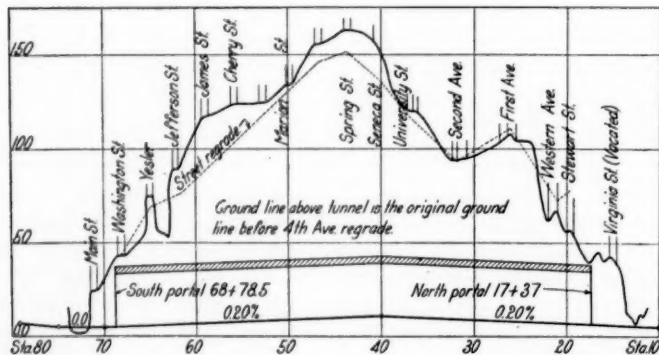


Method of Conducting the Repair Work

were dug in either direction immediately along the center line of the tunnel proper. The advance drifts or headings were built 5 ft. high by 10 ft. wide and the steel lagging was supported by plumb posts and caps made of 8 in. by 8 in. square timber, spaced from 2 ft. to 4 ft. apart, depending on the overburden and the condition of the soil above the excavation. A center row of plumb posts divided the heading in two working vaults, one of which was utilized to remove the excavated material and the other to receive incoming materials, such as sand, gravel, timber, lagging, etc.

In following the excavation work of the headings and as soon as the first bents or forms were installed, the overburden of the soil was carried by supports consisting of steel lagging driven over the caps. This steel lagging was  $\frac{3}{8}$  in. thick by 6 in. wide and 6 ft. long, sharpened to a chisel end, which made the driving easy and contributed largely to the success of the whole underground operation. There was very little, if any, loss of the soil above the steel lagging and the workmen were cautioned to exercise extreme care in installing the steel lagging at the overhead part of the excavation. After the headings had advanced to a suitable distance in each direction from the shaft, side stopes 5 ft. wide were excavated at right angles from the advanced heading down along the extrados of the arch to the spring line and to the old wall plate of the timber tunnel section. The old timbers and the broken down soil were then removed by pick and shovel, ax and cross cut saw, no other machinery being used throughout the process of the mining work.

The whole stope was then free to receive the back filling, which consisted of mine run sand and gravel mixed with a very small amount of Portland cement. The consistency of the lean concrete was determined more or less by the conditions above the tunnel; that is, where the excavation was under large buildings or extensive construction, the mixture



Profile Showing Relation of the Tunnel to the Street Grades

packing above the concrete arch and refilling the space with very lean concrete. This preliminary work was a complete success and the work of placing the concrete packing was carried out with no serious cave-in of the paved streets above or interruption to traffic.

In 1912 subsidence was further observed along Fourth avenue, which as stated above lies directly over the tunnel, and also in a ten-story brick building at the intersection of Third avenue and University street. At other points gas mains, water mains and other public utilities gave evidence of slight openings at some of the joints, at locations immediately over the tunnel. The results of all the uncertain elements of settlement, which was carefully checked by the railway company's engineers and the effects noticed and

was made a little richer, but as an average, one cubic yard of packing when mixed and packed into the void or stope contained one-half barrel of Portland cement. The aggregate was mixed by hand and just enough water added to thoroughly moisten the mixture. This lean concrete was then rammed carefully into place in the side stopes and allowed to set for a few days before the steel lagging was pulled and the next section of the stope packed with a new batch of lean concrete. When the side stope was entirely filled and the lean concrete had set sufficiently to bind itself thoroughly together, the 5 ft. space next to the packed section was opened for another side stope. This allowed the workmen to spread the operation along the advanced headings and did not unnecessarily cramp the working conditions. The distance that mining operations were carried out from each shaft did not depend fully upon the cost of handling the material underground, but depended wholly on the space above the ground where shafts could be located conveniently. Sometimes the advanced headings were carried over 1,000 ft. apart from the shafts and work was thus carried on underground without any great evidence of the extent or character of the repairs that were being made immediately over the tunnel.

Electric power was used wholly in the hoisting apparatus in the shaft and for ventilating purposes in the underground working space. The mined area was well lighted and ventilation was provided through an ordinary 6 in. black iron stove pipe leading to an electric fan. More or less moisture was encountered but the water conditions were undoubtedly different than when the original tunnel was driven, confirming the assumptions the engineers had in their preliminary studies.

The excavated material consisted on an average throughout the entire length of the improvement of about 65 per cent timber and 35 per cent soil. After reviewing the entire work as carried out, it was found that approximately 25 per cent of the timber removed was affected quite badly by dry rot. In most cases no undue pressure from buildings or structures over the tunnel was noticed on the old timber packing, but in a few instances pressure developed on the caps and the plumb posts and the lagging drove and pulled hard in some sections. Under heavy buildings where the railway engineers anticipated settlement, it was deemed advisable not to pull the steel lagging, so as to eliminate as far as possible any voids whatever which might possibly be caused and conditions exaggerated if the steel lagging were pulled from its position after the concrete packing had been placed.

The work was distributed over a period of four years, being started in 1911 and completed in the early part of 1915. Since that time there has been no appreciable settlement to either buildings, streets, public utilities or other construction above ground, and the railway engineers feel confident that the concrete packing over the tunnel was a complete success insofar as subsidence to streets, buildings, etc., was concerned.

#### A Similar Problem at Everett

This concrete packing was placed for a distance of 4,835 lineal feet along the arch of the tunnel at a cost of approximately \$375,000, including some of the miscellaneous repairs to street pavements, street car tracks and public utilities, including water mains along the streets, alleys and public thoroughfares above the tunnel proper. On an average the cost of all of the work, including excavation, backfill, labor charges, material, etc., figured \$78 per lineal foot of concrete packing placed, which was approximately 39 per cent of the original cost of the tunnel. The tunnel proper, including the concrete lining and invert completed, ready to receive the track, cost \$198 per lineal foot at the time of original construction.

About the time that the work on the Seattle tunnel was completed, more or less complaints were received concerning the subsidence of buildings and streets over the Great Northern single track tunnel constructed under the heart of the city of Everett. This tunnel bore joins tide water with the main line of the Great Northern and its industry and yard tracks in the easterly part of the city of Everett. The Everett tunnel was driven in 1900 by the old tunnel mining method, similar to the method adopted for the Seattle tunnel. As near as can be ascertained, considerable trouble was encountered during the original construction of the Everett tunnel in holding the super-imposed earth which was of a sandy character for the greater distance and flowed very quickly if not properly supported by lagging and posts. The original lining of the Everett tunnel was the Great Northern standard timber tunnel section, made sufficiently wide and high to allow the permanent concrete lining to be placed within the timber section.

When the timber lining was placed in the tunnel bore proper, all voids at the sides of the tunnel and overhead were packed with slab wood, which at places measured several feet in thickness, all timbers were exposed to the air currents of the tunnel until 1909, when the timbers began to decay and the strength of the arch was greatly impaired. In 1911 the concrete lining was placed within the tunnel and in 1914 and 1915 serious settlement was noticed in the buildings, streets and public utilities above the tunnel proper. Insomuch as this trouble was experienced about the time that the concrete packing was placed over the Seattle tunnel, the railway's engineers decided to adopt the same method of placing concrete packing over the Everett tunnel. This was done and the work was completed in 1919. It has also proved to be a complete success, no further subsidence or settlement having been noticed since the underground work was completed.

The work on both the Seattle and Everett tunnels was carried out under the direction of the engineering department of the Great Northern, of which A. H. Hogeland is chief engineer at St. Paul, and O. S. Bowen principal assistant engineer at Seattle. W. J. Coventry was general foreman in the field, and the writer was assistant engineer during all of this work.

#### Locomotive Exports from a British Point of View

THAT THE PINCH of American competition in locomotive building is not now being felt in Great Britain owing to the great worldwide demands for locomotives; but that British prices are likely to prove a barrier when conditions again become normal, are among the points brought out in an instructive article entitled *British Locomotive Building* which appeared in the July 19 issue of the *Statist*, London.

The article follows:

The locomotive industry is peculiarly British, as we were the pioneers in railway building. The construction of the home network first claimed our attention, and when that was nearing completion we undertook the development on a large scale of railway communications in other countries, particularly within the Empire and South America. For this purpose an immense amount of British capital was subscribed, and expended mainly in the United Kingdom on the manufacture of rails and rolling stock, locomotives, carriages and trucks. An important export trade was built up, and the industry continued to expand as the amount of British capital invested in railway development abroad became greater. Long before the War, however, a severe measure of competition was

being experienced from Germany, the United States, and Switzerland, especially in the manufacture of locomotives. The great railway expansion in the two former countries alone made such competition possible, though German capital interests, particularly in the railways of the Near and Far East, furnished, as in our own case, an avenue of entry for the products of their engineering shops.

Locomotives from Germany, and also from the United States, were found in South America and in various African markets, such as Egypt and the Uganda, and even in India. Railway mileage was, of course, rapidly extending everywhere, and our growing output found a sale despite the pressure of competition. The volume of business was sufficient to keep all countries remuneratively employed, and, even if there were irregular spells of depression, conditions in the locomotive engineering industry were, on the whole, good up to the outbreak of hostilities. The war strangled the German export trade, curtailed the British, and promoted the American. In this country the centres affected were Glasgow, Manchester and Leeds, the principal seats of our locomotive industry. They turned to the manufacture of shells and ordnance, and such locomotives as they built were mostly requisitioned for use at home or abroad. The normal foreign trade was almost entirely cut off, especially in the last three years of the war. The revival anticipated at the time of the armistice has not yet set in, because home requirements still remain to be filled, and to these a natural priority must be accorded. As our exports for war purposes have also fallen, recent figures show a decline even when compared with the period of restriction.

The following table indicates the value of rail locomotives exported in each year since 1913 and in the first five months of 1918 and 1919:—

RAIL LOCOMOTIVES EXPORTED FROM THE UNITED KINGDOM						
	1913	1914	1915	1916	1917	1918
	Tons	Tons	Tons	Tons	Tons	Tons
To foreign countries.....	18,747	16,603	9,170	13,126	16,604	.....
To British possessions.....	28,374	44,879	32,219	7,795	6,160	.....
Total .....	47,121	61,482	41,389	20,921	22,764	15,272
			1918	1919		
Five months (value).....			£691,813	£365,496		

Communications are a necessity of civilized life, and a continuous demand for locomotives is assured as railway mileage and railroad traffic develop. Further, war losses on the continent must be made good, and neutral countries, which were denied their normal supplies in recent years, are eager to place orders if delivery within a reasonable time can be guaranteed. The result of this general shortage of rolling stock is that the locomotive manufacturers in this country are booked well ahead. They are helped by the dislocation of the Germany industry, which before the war had become a formidable factor in the export market, its products being sent even to England. The adjoining table, taken from German sources, shows the extent of the output prior to the war:—

Year	For use at home and in German colonies, tons	For foreign export, tons	Total output, tons	Number of locomotives
1912 .....	153,100	43,000	196,100	4,052
1913 .....	118,800	40,200	159,000	3,782
1914 (7 months).....	86,100	26,000	112,100	2,392

In South America the Germans were particularly active. We had not felt the United States competition too severely owing to the unpopularity of their designs, but the Germans cut into the trade with a European model at a lower price than the American, and secured a large share of business. It was our second most important market, and during the war, it has been to some extent overrun from North America. It is doubtful even still if American-built locomotives are regard-

ed with the same favor as European. It is very difficult to compare the two models, as natural exigencies have in each case necessitated a development in design and construction along very different lines. Long hauls predominate on the other side of the Atlantic, and short hauls on this side. Accordingly, America has witnessed a greater development of the tender as opposed to the tank engine. Much of our traffic is suburban, and a tank engine, carrying supplies of fuel and water on the same vehicle, and able to run backwards and forwards with equal facility, is better adapted to this class of work. The long haul has further been responsible for the attention paid to compound locomotives on the American railways, while the British have favored single-expansion engines. The weight, size and power of individual engines have thus increased in the United States to a greater extent than here, and before the war there was an incessant struggle for supremacy between the two types. Strict comparisons, even between those of the same class, are difficult, as the American products have not the finish, either generally or in detail, that ours possess. Fine fits are not a feature in American engineering, and the result is shown in the increased running life and decreased maintenance expenses of the British models. Our locomotives are built to last, and are more suited to well-laid lines, while the American are at times surprisingly efficient where the permanent way shows unmistakable defects.

Locomotive building in the United States has increased considerably during the war, and special attention has been paid to the construction of standardized types. Under the War Industries Board the various plants concentrated on special types, and merely by specialization, without any increase in existing facilities, the rate of production was almost doubled. The American industry has become more strongly differentiated from the British; not only by the larger size of the unit engines, but also by the greater multiplicity of standard models and the more marked originality in design. In respect of finish they are still inferior; but in America the preference continues for mass production on native models, an undertaking which the size of the home market enables them to carry through with complete success. Even before the war they could undersell us in certain export lines, but the superiority of the British-built locomotive in regard to life and running expenses more than made up for its heavier initial cost. It is obvious, however, that the price margin against us cannot be indefinitely increased. A point may be reached at which the cheaper American engine is also more economical, despite its finish. The question may be asked if this point is not already reached. In British shops there has been a general reduction in working hours from 53 to 47, and so far the result has been a decreased production per man per hour. Demands for a 44-hour week have been made, and if conceded, with the rate of wages unchanged, and a further decline in output, on the analogy of the preceding reduction, the price of British-built locomotives must be again raised, and the chances of successfully competing in foreign markets will be lessened. It is not at all easy to explain why individual output should be higher in the United States. Many hold that we still possess a superior craftsman, but as against this the horse-power per operative in the American industry is greater. The leading position of the Americans, if not due to better labor or greater mechanical power, may be brought about by superior machinery or more highly developed factory organization, consequent on specialization and mass production. The pinch of their competition is not very severely felt at the moment. Many urgent requirements in India, the Crown Colonies, and the Dominions, as well as in foreign countries, remain to be filled, and orders have been placed here irrespective of costs. When these orders are completed, and the demand becomes again normal, our prices are likely to prove a barrier to sales, unless present unhealthy tendencies in the British engineering trades are speedily checked.

# Doings of the United States Railroad Administration

## Shop Employees' Committee to Accept Director General's Offer. Maintenance Men Defer Demands

WASHINGTON, D. C.

THE RAILROAD SHOP EMPLOYEES affiliated with the American Federation of Labor have voted 325,000 to 25,000 to authorize their officers to call a strike to enforce their original demands for a general increase in wages from 68 to 85 cents an hour rather than to accept the offer recently made to them by the President and Director General Hines of increases of from 4 to 7 cents an hour by way of readjustment. The vote places full authority in the hands of the officers, however and they apparently decided to take what they can get while waiting for a reduction in the cost of living or an opportunity to renew their demands. Although they had once rejected the offer the officers entered into conferences with Director General Hines and his assistants in the Railroad Administration on September 5, prepared to accept the offer and to negotiate for the national agreement covering rules and working conditions which Mr. Hines had promised them before the negotiations were broken off on August 1 by the unauthorized strikes. Mr. Hines attended the conferences on Friday and Saturday and they were continued this week by his assistants after Mr. Hines had left for a vacation of about two weeks.

Director General Hines on September 4 addressed an ultimatum, similar to that issued in the case of the striking trainmen in California, regarding the local and unauthorized shop strikes on the New York Central at Depew, N. Y., on the Baltimore & Ohio at Cumberland, Md., and on the Chicago, Burlington & Quincy at Havelock, Neb., saying that unless the men returned to work not later than their regular reporting time on Saturday, September 6, they would be considered as having permanently left the service, their places would be filled and if they returned to the service later it would be only as new employees. This notice was conveyed in telegrams sent to the regional directors, stating that the chief executives of the shopmen's organizations had definitely instructed their men to return to work, directing that the federal managers post the telegrams conspicuously on bulletin boards and consider them as their instructions to proceed accordingly.

### Maintenance of Way Employees Defer

#### Demand for General Wage Advance

The United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers was given a hearing last week before the Board of Railroad Wages and Working Conditions and, although its members had taken a strike vote to enforce general demands recently filed with the Railroad Administration, after considering Director General Hines' instructions to the wage board, not to consider requests for general advances, the brotherhood announced its intention of adhering to the advice of the President and holding its general demands in abeyance until the government has had an opportunity to reduce the cost of living. The original demand was left with the board and in its place the representatives of the brotherhood filed a statement asking for the adjustment of what they termed inequalities in the present wage rates. This amounted to so much of an advance, however, that the representatives of the regional directors filed a statement opposing it on the ground that it constituted a general increase and recommending that any adjustment be treated as a local matter to be determined in the light of local conditions.

L. I. Kennedy, representing the brotherhood, said he wanted

to go on record as demanding that in the event the cost of living is not reduced within a reasonable time the brotherhood be given an opportunity to present its claims for the general advance, and he called attention to the strike vote. In presenting the request for a readjustment Mr. Kennedy asked that the basic rate of track laborers be placed at 40 cents an hour, to which would be added an increase of 10 cents, making a minimum rate of 50 cents, and that the basic rate of mechanics be placed at 58 cents, to which would be added 10 cents, making the minimum rate 68 cents.

He said that trackmen now receive 28 to 40 cents an hour and track foremen \$100 to \$122.50 a month and that in many large terminals track foremen and other employees performing the same work receive different rates of pay. Also on many large systems adjoining divisions pay different rates and there are differences between main and branch lines. Shop laborers, he said, receive various rates for the same work, many of them varying between 34 and 43 cents an hour, while mechanics in the bridge and building department receive 53 to 68 cents, whereas in other departments mechanics receive uniform rates for all classes of work. In many instances, he said, mechanics on the same operation receive different rates, part of the difference being that some are paid under Supplement 4, dealing with shop men, and others under Supplement 7, which deals with maintenance of way employees. Signal foremen, Mr. Kennedy said, receive the rates of Supplement 8 while men under them are paid according to Supplement 4. He asked the higher basic rates in order to bring about uniformity.

G. L. Moore, engineer maintenance of way of the Lehigh Valley, chairman of the committee representing the regional directors, said that under the director general's instructions no general increase could be considered at this time and that the present rates do not represent discrimination, except where some roads may not have given the proper rate to section foremen, because the differentials were not disturbed by General Order No. 27 and its supplements except as lower paid men were given the larger percentage of increase. Any adjustments that should be made should be dealt with locally.

### Director General on Vacation

Director General Hines is taking his first vacation since he became connected with the Railroad Administration at the time the railroads were taken over by the government. He expects to be away from Washington for about two weeks.

### Cost of Freight Train and Locomotive Service

The total cost of freight train service, including locomotive service, continues to show a steady decrease each month as compared with preceding months, although increases as compared with last year, according to the monthly report of the Operating Statistics Section. For the month of June it was 101.8 cents per 1,000 gross ton miles, as compared with 103.9 in May, 112.7 in April, 119.5 in March, and 126.5 in February. No comparison of this figure with last year is given. The cost of freight locomotive service per locomotive mile in June was 107.1 cents, as compared with 97.4 cents in June, 1918, an increase of 10 per cent, and as compared with 110.3 cents in May of this year. The cost of freight train service per train mile was 154.7 cents, as compared with 142.8 cents in June, 1918, an increase of 8.3 per cent, and

as compared with 156.8 cents in May. All items of cost continue to show increases as compared with last year. The combined averages for all regions and the comparative figures for last year and for preceding months of this year are as follows:

	June			June	
	1919	1918		1919	1918
Cost of locomotive service per locomotive mile.....	107.1	97.4			
Locomotive repairs .....	36.1	31.1			
Enginehouse expenses .....	8.8	6.8			
Train engine men .....	19.6	18.5			
Locomotive fuel .....	39.1	38.1			
Other locomotive supplies.....	3.5	2.9			
Cost of train service per train mile.....	154.7	142.8			
Locomotive repairs .....	101.8	103.9	112.7	119.5	126.5
Enginehouse expenses .....				51.1	43.7
Locomotive fuel .....				44.6	43.9
Other locomotive supplies.....				4.0	3.4
Train engine men .....				22.3	21.3
Trainmen .....				25.6	25.3
Train supplies and expenses.....				7.1	5.2
Cost of train service per 1,000	June, 1919	May, 1919	April, 1919	March, 1919	Feb'y, 1919
Locomotive repairs .....	33.7	35.4	38.6	40.8	43.1
Enginehouse expenses .....	29.3	30.6	34.3	37.5	40.3
Locomotive fuel .....	2.6	2.6	2.9	3.1	3.4
Other locomotive supplies.....	51.5	31.1	32.4	33.5	34.8
Engine men and trainmen.....	4.7	4.2	4.4	4.6	4.8
Train supplies and expenses.....					

### Administration to Order Rails

The Railroad Administration was expected to place orders this week for 200,000 tons of rail, to be divided among the different steel companies in proportion to their ability to make prompt deliveries, but final action was postponed. The price bid by the steel companies is understood to have been the same as that for the original order of 200,000 tons placed by the Railroad Administration in May, \$47 a ton.

### Report on Collision of Atlantic City Trains

Immediately following the collision on the Pennsylvania Railroad at Elwood, N. J., on Sunday, August 24, involving the ninth and tenth sections of an excursion train from Washington, D. C., to Atlantic City, N. J., an investigation was begun by the Railroad Administration, cooperating with the Interstate Commerce Commission, the local authorities, and the Board of Public Utilities Commission of New Jersey. The management of the Pennsylvania Railroad, acting under the direction of the regional director of the Allegheny region, C. H. Markham, has reached a determination as to responsibility, and disciplinary action has been ordered.

Aside from the responsibility for the wreck itself, claims having been made with regard to the general conduct of the excursion trains in question, C. S. Lake, assistant director of the Division of Operation of the Railroad Administration, was sent immediately to the scene by the Railroad Administration to make a thoroughgoing inquiry into such supplemental circumstances. Mr. Lake has now made a full report, covering the entire situation, particularly with reference to the claim (1) that wooden coaches were used on the excursion trains in question, (2) that the trains were not adequately lighted, (3) that the trains were not adequately watered, and (4) that passengers were not properly treated following the wreck.

Mr. Lake's report as given out by the Railroad Administration is summarized herewith:

Investigation discloses the accident to have been directly attributable to the failure of Engineman Ralph J. Townsend to observe or regard caution indication of automatic signal, and stop indication of automatic signal as required by rule and as was entirely feasible, and to failure of Flagman W. E. Duvall and Brakeman E. F. Quinn, who was also on rear by instructions of conductor, to afford proper protection to train as required by rules, and to failure of Conductor J. E. Price to see personally that protection was afforded as required, which was also entirely feasible.

Engineman Townsend of the tenth section has testified that

he did not see signal (stop indication), located 2264 feet from point of accident, until he was within 6 feet of it, and that his vision was obscured by fog, which admittedly prevailed on the morning of the accident, and by escaping steam from the right piston of his engine. Engineman C. W. Disney, who ran this engine from Washington to West Philadelphia, and Road Foreman of Engines Joseph J. Cook, who especially tested the engine in order to determine whether escaping steam was such as to obscure the vision, testify that leaks obtained, but that steam did not escape sufficiently to obscure the vision. If the conditions were as described by Townsend, it was his duty to have exercised such precaution as would have insured safety. Although he is qualified on and thoroughly familiar with the physical characteristics of the division upon which the accident occurred, his testimony clearly indicates that he did not know of his whereabouts at the time the accident occurred; that he failed to discern signal No. 349 altogether, and thought that the accident occurred at Magnolia instead of near Elwood.

Between the hours of 9:00 p. m. Saturday, August 23, and 12:50 a. m., Sunday, August 24, the Pennsylvania Railroad moved 10 excursion trains, 119 coaches, 6,261 passengers, from Washington, and 6 excursion trains, 67 coaches, 3,576 passengers from Baltimore destined for Atlantic City, at which point the first section of these various trains was due to arrive at 4:00 a. m., Sunday, it being deemed inadvisable and contrary to the usual practice to discharge excursionists there earlier than that hour on account of accommodations being inaccessible.

Records indicate that the 16 trains from Washington and Baltimore consisted almost entirely of wooden equipment, part of which was owned by the Pullman Company. The equipment was in condition for safe operation and its use was allowable under legal regulations. Sixty-six per cent of the total equipment operated by railroads under government control is of wooden construction, 7.4 per cent wooden bodies with steel underframes, and only 26.6 per cent of steel construction, which situation necessitates the use of wooden equipment in excursion traffic if accommodations are to be afforded. If wooden equipment were not used it would be impossible to run these excursion trains.

The Pennsylvania Lines East own 2,340 coaches, or 8.5 per cent of the total coach equipment operated by lines under federal control, including 1,411 steel coaches, but the travel requirements of that line this year are approximately 250 coaches per day in excess of equipment owned; and to accommodate daily and especially week-end seashore requirements, it has been necessary for them to make requisition from the Troop Movement Section of the Railroad Administration for equipment, without which excursion service, which has been insistently demanded, could not be furnished.

It did not develop until Friday, August 22, two days prior to the excursion, that it would be necessary to use about 80 tourist sleepers which were obtained from the Troop Movement Section. The Washington Terminal people and Pullman Car Lines co-operated to endeavor to get this equipment in the best possible condition. The cars were thoroughly cleaned, equipped with lights and water, but two P. R. R. steel coaches used in local suburban service were not equipped with water coolers. These cars were placed in the fourth section out of Washington and not in either of the trains concerned in the accident. To insure adequate gas supply the number of burners for service in tourist cars, used in troop movement, had been reduced to two or three, and these were lighted leaving Washington. Tourist cars lighted by electricity had such equipment removed and were lighted by from four to seven ordinary hand oil lanterns, attached to specially designed holders on ceilings and walls of the cars. The reports show that several of the lights were put out by passengers on leaving Washington so they could sleep. Con-

ductor Price stated to the coroner's jury at Atlantic City that he had reported bad lighting to station officers at Washington but a careful check shows he made no such report. Every effort, therefore, was made to condition these coaches to handle the very unusual traffic.

Physicians at Elwood were immediately summoned, and, as soon as means of communication could be effected, physicians from Hammonton (6 miles distant) were ordered, and the accident was reported to the division officials at Camden, who were erroneously informed that both tracks were blocked. The injured persons were transferred to the undamaged coaches and held at point of accident to enable physicians who arrived from Hammonton to render first aid. The train then proceeded accompanied by physicians to Atlantic City.

As to action taken as a result of the wreck: Proper disciplinary action has been ordered against the men found to be directly responsible; the erroneous information concerning the blocking of both tracks, which led to delays and inconvenience to passengers, was due to the fact that first attention naturally was given to the injured. Orders have been issued that cars used in excursion trains must be suitably lighted and provision made for an adequate supply of drinking water on trains.

#### Committee on Health and Medical

##### Relief to Submit Report

The Committee on Health and Medical Relief, Dr. D. Z. Dunott chairman, which was instructed to make a complete survey of health, surgical and medical problems and to make recommendations to the Railroad Administration, is expected to submit shortly the result of its researches, together with recommendations upon subjects that it has investigated up to the present time.

The committee's chief interest will be found:

First: In the development of a uniform set of sanitary rules and regulations for stations, shops, trains, office buildings, camps, rest-houses, Y. M. C. A.'s, etc.

As a result of its work the man on a small railroad line will receive the benefit of the country's highest skilled surgeons and doctors just as the employee on the larger system has heretofore been so benefited, and the whole body of employees and patrons will benefit through rules and regulations covering all phases of railroad sanitation—the first complete set ever formulated—which is a great step forward.

Second: The study of the latest and most approved methods of treating injured persons, with the view to establishing at strategic geographical locations, in conjunction with city, state or other hospitals, functional clinics and vocational training schools. Thereby an opportunity will be given to injured employees and others injured on railroad property to receive the most advanced and scientific treatment, in order that wherever possible such injured employees and others may be rehabilitated and restored to their former occupations, and, where this is impossible, establishing them as nearly as may be to their former earning capacity.

The committee has given most careful consideration to the question of first aid and is ready to submit a first aid packet containing dressings and a full set of instructions, which will permit the layman to apply intelligently first aid dressings. It is also giving consideration to the establishment of first aid teams on such railroads as do not at the present time have them.

Railroads in some parts of the South, co-operating with state and public health officials, have already conducted a successful campaign in combating malaria and hookworm, and the committee is urging that this campaign be extended to other localities infected with these disabling diseases.

In making its surveys the committee has not only consulted surgical departments of the railroads but has also consulted many prominent professional men outside of railroad service, state boards of health and the United States Public Health Service, with the sole idea of giving to the employees and patrons the best possible protection and care.

#### Passenger Traffic in June

The number of passengers carried one mile by the railroads under federal control in June amounted to 4,145,379,862, an increase of 5.6 per cent as compared with June, 1918, according to the monthly report of the Operating Statistics Section. The Ohio-Indiana district and the Southern region showed decreases. For the six months ending June 30 the number of passenger miles was 21,320,651,049, an increase of 4.6 per cent. In this case also the Ohio-Indiana district and the Southern region showed decreases, while the other regions and districts showed increases ranging from .2 per cent for the Southwestern region to 18 per cent for the Pochontas region.

#### Additional Appropriation for the Alaska Railroad

**A**N AUTHORIZATION of an additional appropriation of \$17,000,000 to complete the construction of the government's Alaska railroad between Seward and Fairbanks was voted by the House of Representatives on September 6. The original appropriation for this work was \$35,000,000 but because of the increased prices of materials and the increases in wages this was found insufficient. The original appropriation has been practically exhausted and it was stated to the House that unless the additional funds are provided the work would have to be stopped this fall.

If the bill becomes a law the appropriation will have to be passed upon by the committee on appropriations. The road is now completed for a distance of approximately 227 miles on one end and 100 miles on the other end with a gap between.

In reporting the bill from the Committee on Territories, Representative Curry of California submitted a report in part as follows:

"Hearings having been held on July 23, 24, 25, and 31, 1919, the report of the Alaskan Engineering Commission having been submitted and the testimony of officers of the Alaskan Engineering Commission having been fully considered, the committee finds:

"That the construction of the Alaska Railroad by the Alaskan Engineering Commission has been prosecuted under most adverse conditions, due in large part to the war, and the work has been done at the lowest cost consistent with the permanent character of the work performed. The railroad will cost on completion approximately 31 per cent more than the amount originally estimated and the entire project, including terminals, rolling stock, and physical property, and maintenance and operation charges in excess of revenue during the entire period of construction less than 50 per cent more than the amount originally authorized to be expended. Since the commencement of the construction of the road, wages of employees increased 59 per cent; the prices of materials and supplies as much as 161 per cent, and transportation costs 147 per cent. The result of accomplishing this construction at an increase of no more than 50 per cent under such circumstances is due in large part to the system of station contracts by which the original estimates of excavation costs were very closely approximated.

"That though engineering mistakes have occurred, due to flood and other unforeseen conditions, they have not been a

material factor in the increased cost of the work and probably no greater than would be encountered on any project of such magnitude in a country of unusual climatic conditions.

"That the development of town sites along the line of the railroad and the assistance rendered to home seekers have been of notable value in the settlement and development of the adjacent regions. The providing of ample sanitary housing facilities for employees was wise and was necessary for retaining ample working forces, the maintenance of a proper morale amongst the workers employed on the enterprise and necessary to the preservation of the health, and the maintenance of order in the new communities. The work accomplished has been of a substantial character, at a cost that compares most favorably with the cost of other railroads in Alaska and in the western states, and especially so when consideration is had of the increased costs and abnormal conditions prevailing during the period of construction.

"That the completion of the Alaskan railroad would have been accomplished within the amount originally authorized and at a much earlier date than is now possible but for the heavily increased cost of labor, material, and supplies, and there would have been a considerable saving both in cost and in time of construction, had the entire amount been appropriated so as to be continuously available; whereas by the system of annual appropriations the construction forces have been impeded and delayed in the prosecution of the work, and it has been impossible to take advantage of the full open working season in Alaska, from May to October, inclusive, by reason of such limitations. That in order to complete the railroad from Seward to Fairbanks by December 31, 1922, the sum of \$17,000,000 additional to the \$35,000,000 originally authorized will be required and this sum should be appropriated at the earliest possible date to be immediately and continuously available until expended. Delay in making such appropriation would have the effect of increasing the ultimate cost of the project and injuriously affect and postpone the development of Alaskan resources. The loss to the Nation by such delay would, through the discouragement of Alaskan industrial enterprises and the prevention of the creation of new wealth from her abundant resources, minimize and neutralize any apparent gain through temporary saving of funds to the Treasury.

"That the importance of utilizing Alaska's coal deposits in providing fuel supplies for the Pacific coast and for the trans-Pacific merchant marine is second only to the fuel demands of the Pacific fleet of the United States Navy. The activities of the Alaskan Engineering Commission have demonstrated the practicable, profitable character of coal mining in Alaska. Much of the Alaska coal is a coking coal and could be used to smelt iron ore and for other manufacturing purposes.

"That failure to complete the Alaskan railroad after having made an investment of \$35,000,000 therein would result in the loss of a very considerable portion of the investment, because with the operation of so much of the line as it is possible to complete for that sum, it would be impossible to earn a sufficient revenue to maintain the completed portions; and the consequent depreciation and deterioration would be great. The necessity for appropriating the \$17,000,000 additional is evident for the protection of the funds previously invested.

"When the sum of \$35,000,000 has been expended, there will be two uncompleted sections of the railroad separated by a gap of 100 miles, on which no work has been done. The south section, consisting of approximately 227 miles of main line and 32 miles of branch line, which is now in operation, but which will require construction of snowsheds, riprapping embankments, etc., to be complete, will serve the coast ports of Anchorage and Seward, the interior settlements at Matanuska, Wasilla, and Talkeetna, and the coal mines of the Matanuska field. The north section, consisting of 106 miles of main line and 37 miles of branch, will be practically com-

plete except for the construction of bridges over the Nenana and Tanana Rivers. This section will serve the terminal city of Fairbanks and the mines of the Fairbanks field, the town of Nenana, and the coal mines of the Nenana fields, effectively only with the construction of the bridges which will not be possible under the appropriation of \$35,000,000. The revenue of these two widely separated and independently operated parts, when completed, would be confined to the earnings from such meager traffic as could be locally developed. This would be negligible as compared to the possible earnings resulting from through traffic from the Alaskan seaboard to the navigable waterways of the interior of Alaska. The operation of these fragmentary parts, each independent of the other, can only be accomplished at a considerable loss, whereas traffic requirements of the interior promise to the completed road a much larger volume of business.

"The economic development, however, of the vast Alaska interior is dependent upon the completion of the railroad to the navigable waters of the interior, and the development of agriculture in the region through which the railroad passes is dependent upon the creation of a market for the product, and this market can only be provided by the development of the mining and kindred industries adjacent to the railroad, and the development of the mineral resources is dependent upon proper provision of economical transportation for men, machinery, and supplies, and this is not possible with the railroad left in an uncompleted stage.

"Of the \$35,000,000 authorized in the original act there remains but \$2,038,029 available, and that amount was appropriated in the last sundry civil act. This amount, however, will only be sufficient to continue the construction work on the railroad with the present inadequate force of about 2,460 men until the middle of October, and provide for operation and maintenance to the end of this fiscal year. The disorganization of the construction force before the completion of the project would entail a material loss in time and money.

"That the length of the main line (standard gage) from Seward to Fairbanks will be 471 miles; with branches, 545 miles; including branches and spurs, 549 miles. The total length of the railroad, including main line, branches, spurs, and sidings, when completed, will be 601 miles. Of this 371 miles have track in place and are in operation, and 34.5 miles of sidings are in place. All of the remaining portions of the line, with the exception of the 100-mile gap between miles 265 and 365 north of Seward, are in various stages of completion. The government purchased the Alaska Northern Railroad of 71 miles running out of Seward, and paid for it the sum of \$1,157,839.49. The Alaska Northern Railroad has cost the private owners \$5,250,000. The reconstruction of the Alaska Northern has cost to date \$1,801,155.08, and it is estimated that it will cost to complete \$1,718,182.64 more, or a total of \$3,518,337.72.

"The government also purchased the Tanana Valley Railroad for \$300,000. This road is narrow gage, 44 miles long, and the purchase price included the shops and terminals at Fairbanks. Its rehabilitation to date cost \$46,407, and there will be a further expenditure of \$84,300 on this line. It is stated that this railroad cost the original owners about \$800,000.

"It is estimated by the engineers and the Alaskan Engineering Commission that on its completion the cost of the Alaska railroad, on the basis only of mileage of main line and Matanuska branch, totaling 508.4 miles, will be about \$73,200 per mile, while the cost of the entire project on the same basis will be \$99,200 per mile. Including estimated maintenance and operation expenditures in excess of revenue to and including the year 1922, not included in the foregoing, the cost will be about \$102,300 per mile. The latter estimate includes all equipment, rolling stock, terminal facilities, including harbor improvements at Anchorage, dock and wharf facilities

at Seward, Anchorage, and Nenana, physical property, purchase and rehabilitation of the Alaska Northern and Tanana Railroads and all expenses of every kind and character connected with the construction of the road, and its activities, including operation expenses in excess of revenue during the construction of the road from 1915 to 1922 inclusive, which is estimated at about \$5,987,000.

"The only other government built railroad, that across Panama, cost \$221,052 per mile.

"The cost of construction of the Copper River & Northwestern Railway, 194.98 miles in length, extending from Cordova to Kennicott, Alaska, is given in the hearings on the Alaska case before the Interstate Commerce Commission at about \$83,000 per mile. The book value of this railway in its return to the Interstate Commerce Commission for the year 1917 is given as \$146,090.39 per mile. The grades for the last 65 miles on this road are 4 per cent. This road is not equipped as completely, even proportionately to its length, as the government railroad in terminals, rolling stock construction, operating and marine equipment, machinery, and physical property.

"The Pacific & Arctic Railway & Navigation Co., owning the White Pass & Yukon Railway from Skagway to the inter-

national boundary at the summit of White Pass, a distance of 20.4 miles, shows in its return to the Interstate Commerce Commission for the year 1917 a book value of \$115,343.68 per mile. This road is narrow gage with 4 per cent grades.

"That all possible inducements, with proper safeguards against monopoly, should be extended to pioneer endeavor in the utilization of Alaska's resources, to encourage and to bring about the intensive private development essential to a stable citizenry. Such a policy will create traffic for the railroad and in time make the enterprise profitable.

"The region tributary to this railroad has produced in mineral wealth over \$111,000,000, of which the Fairbanks section at the interior terminus of the road has produced in excess of \$71,000,000, practically all of which has been from placer gold. Throughout the Alaskan interior only the very richest and most profitable mining is possible under the uneconomic conditions now prevailing. The completion of this railroad will make profitable the mining of large bodies of low grade ore, the development and working of which is not now practicable.

"The known mineral resources of that part of Alaska that will be served by the railroad are gold, silver, copper, coal, lead, tin, iron, antimony, tungsten, and platinum."

## Railroad Problem Discussed at National Conference

"Our Country First" Meeting at Chicago Considers Possible  
Solutions of the Present Industrial Unrest

**F**RANK DISCUSSION of the causes of the present national unrest and industrial conflict characterized the national "Our Country First Conference" held under the auspices of the Illinois Manufacturers' Association at the Congress Hotel, Chicago, on September 8 and 9. The conference was largely attended and included representatives of agricultural, manufacturing, mercantile, banking and transportation interests from 36 states. The work accomplished by the conference as a whole, the subject matter of practically all of the addresses delivered, and the prevailing topic at the round-table discussion followed practically without deviation the thought outlined in the call to the conference, a portion of which said: "Several distinct groups are endeavoring to create public sentiment by the presentation of ex-parte views. Congress, to arrive at a just conclusion, needs the facts as well as the views of all classes of citizenship. A clear and fearless expression of opinion should be formulated and proper committees appointed to present the conclusions reached to Congress and others concerned in order that fair and honest legislation may be enacted, a square deal given to all and a nation freed of the agitators who are trying to overthrow the very foundations of our government." There was a "clear and fearless expression of opinion" and the work of the resolutions committee shaped the consensus of the delegates' opinion into effective form so as to best reach members of Congress and others directly interested in the solution of reconstruction problems.

The conference opened on Monday, September 8, at 10:30 a. m. with an address of welcome by Dorr E. Felt, president of the Illinois Manufacturers' Association. S. M. Hastings, former president of the Illinois Manufacturers' Association, delivered the opening address in which he sounded the keynote of the conference and briefly outlined the results which it is hoped will follow. Harry H. Merrick, president of the Mississippi Valley Association, the Chicago Association of Commerce and the Great Lakes Trust Company, closed the first session of the conference with an

appeal for vigorous action to combat the unwarranted positions taken by certain branches of organized labor and the efforts of bolshevistic agitators in the labor organizations.

The Monday afternoon session was addressed by S. T. Bledsoe, general counsel of the Atchison, Topeka & Santa Fe, Roland B. Mahany, assistant to the Secretary of Labor, J. F. Zoller, general counsel of the National Conference of State Manufacturers' Associations and Samuel R. McKelvie, governor of Nebraska. The afternoon session touched upon the absurdity and socialistic principles of the Plumb plan for government ownership of the railways and their operation by employees. However, it remained for Mr. Bledsoe adequately to present the present railroad situation, its causes and possible solution and the utter impracticability of the Plumb plan.

Mr. Bledsoe stated that the railroad problem is one of adequate revenue, adequate facilities, efficient and continuous transportation and reasonable and nondiscriminatory rates, (the reasonableness of rates having due regard for the cost of the service). He advocated the placing of supreme rate making authority in one national tribunal with regional commissions well distributed so as to be available for the protection of local interests, the exclusive regulation of the issuance and disposition of all securities of all common carriers engaged in interstate commerce by the national government, a policy of mergers and consolidations with governmental sanction arranged so as to preserve as fully as possible helpful competition and to relieve the maintenance of unnecessary and wasteful competition, the creation by Congress of a board for the settlement of all controversies relating to wages and working conditions, and the prohibition of concerted action in leaving railway service. After presenting a resume of the comparative increases in wages, the number of railway employees, operating revenues and income during the period from 1900 to 1919 and the moral involved, Mr. Bledsoe exposed the fallacies of the plan of the railway brotherhoods for government ownership of

railroads and their operation by employees, presented before the House of Representatives in the Sims bill. The dangers lying behind the adoption of such a bill by Congress were fully explained by Mr. Bledsoe, as were the bolshevistic characteristics of this move on the part of organized labor, backed by what Mr. Bledsoe termed as "the most insidious in character of any propaganda ever conducted in this country."

On Tuesday evening an open forum was held which was presided over by W. H. Manss, former director of the War Service Committees of the War Industries Board. Numerous short addresses were made by representatives of various branches of industry, all deprecating any tendency toward radicalism now being manifested by certain classes of organized labor. The most important address on Tuesday was by Charles Piez, president of the Link Belt Company, who made a vigorous attack upon the Plumb plan.

The resolutions committee was headed by Mr. Piez, who until recently was vice-president of the Emergency Fleet Corporation, and its membership included representatives of the agricultural, the manufacturing, and various other business interests of the country. Alba B. Johnson, president of the Railway Business Association, was vice chairman.

The resolutions throughout express the opposition of the conference to all socialistic and bolshevistic tendencies. They demand maintenance and protection of the right of private property, and that the government's activities affecting business shall be reduced to the smallest scope at the earliest moment. They oppose any further appropriation by Congress to maintain the United States Employment Service.

The resolution regarding railroad regulation is as follows: "We commend the zeal with which committees of Congress are seeking a solution of the transportation problem. The increasing demand for food supplies necessitates the opening up of new areas of agricultural production by the extension of transportation systems. Discontinuance of terminal and other railway development has had an important effect upon the general cost of living. Resumption of railway development will tend to stabilize employment of labor, especially if the country should be afflicted with depression, for experience demonstrates that railway buying always stimulates and sustains employment and general prosperity. We hail with satisfaction the evident purpose of Congress to reject government ownership of railroads or their management under domination by employees, and to enact instead a law for the prompt reestablishment of private operation. We favor transportation development as a government policy and urge a law prescribing that rates shall be such as to yield income sufficient to encourage such development."

The resolutions declare that every attempt by governments to fix prices has been a failure and that experience shows this is a dangerous field for the government to enter.

They advocate freedom on the part of farmers to organize to buy, sell and bargain collectively concerning their own products.

They declare that adequate and efficient production is the basis of social well being and progress for the individual and the community, and that it is the duty of the wage payer, the wage earner, and the community to exert every reasonable effort for improving and increasing the quantity and quality of production.

They set forth that while the individual worker and his employer should be free to cease the individual employment relation, provided no contractual obligation is violated, "nevertheless employee and employer in government and public utility services where the public service is paramount, should be restrained by law from instituting by concerted action a strike or lockout, and instead effective machinery should be established in such services for prompt and fair hearing of any requests, differences or disputes touching upon

the employment relation, and for adequate redress of any grievances proven to be justified."

After mentioning the cause of the high cost of living the resolutions set forth that employees and employers individually and by their duly instituted organizations should pledge themselves to exert every reasonable effort for the elimination of disturbances tending to interrupt production, and for a speedy return of all industry to a normal basis.

They urge a reduction of federal taxation as rapidly as possible and the adoption of the budget system by the national government as a means of controlling and reducing its expenditures. The resolutions will be presented to Congress, and steps will be taken to form some kind of organization to give effect to them.

## Orders of the Regional Directors

**DISPOSITION OF OLD TIES.**—The Northwestern regional director, file 113-1-1, quotes Western Region Circular 138 issued June 28, 1918, containing suggestions for the disposition of old ties and suggests that the instructions contained in this circular be carried out wherever practicable. The circular quoted states that old ties may be used for lighting fires in engines, may be given to section men, section foremen or other employees, or to farmers in exchange for plowing fire guards or performing other work for the maintenance for the right of way or they may be disposed of to the public at a reasonable price.

**Eastern Car Pool Gondolas.**—Supplement 5 to Freight Car Distribution Notice 8 of the Northwestern regional director states that although attention has been repeatedly called to the necessity of the prompt return of Eastern car pool gondolas, including hopper cars, the results obtained have been far from satisfactory and suggests:

1. The conditions now required are that the release, movement and handling of this equipment be followed personally, making such systematic check as will indicate that these cars are being handled strictly according to instructions.
2. Cars in inter-mountain and Puget Sound territory will be given eastbound loading to the fullest extent into eastern territory, and such loading provided with the least possible delay.
3. All pool cars located elsewhere must be moved home empty unless immediate loading is available to or in the direction of the junction point with a pool road.
4. Cars must not be loaded contrary to homeward direction unless specifically authorized, and such authority will only be given in connection with drop-end, low-side gondolas (mill type) when concurred in by the Car Service section.
5. These instructions are not intended to interfere with the backhaul movement of these cars from Missouri river points into Puget Sound territory which has already been authorized.

**Yard Operations.**—Circular 16 of the Northwestern regional director states that complaints from shippers respecting delays to cars indicate a necessity for careful consideration of the yard operation methods in force and the rearrangement of this work in order that they may be operated more efficiently. The circular outlines the principal causes of complaints concerning yard operation and means whereby the cause of these complaints may be eliminated and suggests that all officers responsible for terminal and yard operation be directed to give these matters their closest attention and that experienced men be especially detailed to check up the operation of yards and terminals.

**Fuel Situation.**—The Northwestern regional director, file 28-1-33, states that the commercial fuel situation is becoming acute and that the demands on the transportation facilities for the movement of fuel during the next three or four months will be extremely heavy. The circular quotes existing instructions for the handling of this class of equipment and outlines means by which these existing instructions may be made effective on the lines in this region.

# A Pulverized Fuel Equipment for Locomotives

A Compact Unit, Easily Installed on the Tender; Variable Speed, Four-Screw Feed and Dual Control

**A** PULVERIZED FUEL equipment for locomotives has been developed by the Fuller Engineering Company, Allentown, Pa., and has been applied to a Lehigh Valley locomotive. This equipment consists of a fuel tank on the tender, the fuel feeding apparatus, a special arrangement of combustion chamber, slag or ash pans and smokebox. The device is mounted on the tender deck and is operated by a reciprocating steam engine and a steam turbine driven fan.

The standard brick arch supported on four 3½-in. arch tubes is applied in this locomotive as in hand fired practice, except that the arch is run within two feet of the back sheet and within about 12 in. of the crown sheet in the center, while the side bricks are not carried up so far.

The exhaust nozzles in this locomotive, of which there were two, were removed thus giving a free exhaust and eliminating all back pressure in the cylinders due to this cause. A sleeve has been secured to the end of the open exhaust stand

15 to 20 per cent of the air required for combustion, the rest being drawn in by the action of the exhaust through the openings in the firebox and in the burner proper.

The four feeders operating in pairs prevent the fuel from arching over and feeding unevenly due to the tendency of the coal to become tightly packed in the tender by the constant vibration while the engine is running.

The reciprocating engine, which drives the feeders by means of a steel pinion and gears, is controlled by a wide range variable speed governor connected to the crank shaft by a Morse chain drive. A flexible shaft, controlling this governor, enables the fireman to obtain a variation of 346 per cent in the speed of the reciprocating engine, and thereby of the coal which is fed to the locomotive, without leaving his seat in the cab.

As it is carried forward from the tank the coal is pushed over two small shelves in the enlarged end of the feeding



Lehigh Valley Locomotive Equipped with Pulverized Fuel Burning Apparatus

and extended several inches up into the petticoat pipe. The petticoat pipe itself has been lowered 18 in. so that its lower end is now practically on a line with the center line of the boiler proper. This was done to reduce the draft in the front end, and thereby in the firebox, in order that the air and coal may enter the firebox at a velocity low enough to permit the coal to be completely consumed before being drawn over the arch, thus preventing the accumulation of slag on the flue sheet.

The pulverized coal tank is divided so that pulverized anthracite sludge may be carried in one side and bituminous coal in the other side. Very poor grades of coal can be burned in combination with soft coal by so manipulating the feed screws as to supply the proper proportions of soft coal and anthracite sludge necessary to maintain a proper temperature.

The apparatus for conveying coal from the tender to the locomotive consists of four 4-in. feed screws working in pairs and driven by a variable speed inclosed marine type two-cylinder double-acting reciprocating engine. The fan for blowing the coal into the locomotive firebox is driven by a steam turbine. The turbine fan supplies approximately

casing, where it is spilled off in two cascades, which are in turn caught between three currents of air from the turbine fan mounted directly above. This arrangement causes the coal to thoroughly mix with the air before it is blown to the burner, where it is further diffused and more air added to it.

The turbine fan is driven at constant speed while in operation, the determining factor being that the pressure through the hose and in the burner shall distribute the flame evenly beneath the arch without causing it to impinge on the flash wall and thereby cause undue deterioration of the fire brick.

With the governor control and the two clutches a variation in coal feed of about 800 per cent between the minimum and maximum is obtainable with this apparatus, and the minimum can be reduced still further by throttling the steam in addition to the action of the governor control.

Should either pair of the feeders become inoperative through some foreign matter being caught in them, the governor can be thrown out of operation and a single pair of screws can be driven at double the speed and thus supply sufficient fuel to operate the locomotive without failure. This wide range of speed is permissible as the ordinary maximum

speed at which the reciprocating engine is run is less than half the speed of which it is capable, and this variation is also obtainable with the turbine fan without exceeding its rated capacity.

The maximum direct draft air pressure carried on the Fuller equipment is approximately three inches to four inches in the manifold beneath the fan or about  $1\frac{3}{4}$  oz. to 2 oz., and this pressure is immediately reduced in the burner. A feature of the burner is that the flame spreads out and evenly fills the firebox beneath the arch no matter whether one pair or two pairs of feeders are in operation.

A notable feature is that practically all of the air which enters the firebox, either through the burner or otherwise, is under the control of the fireman at all times, thus eliminating an excess of air and enabling the locomotive to be worked at maximum capacity without drawing in any more air than is necessary for complete combustion. At the same time this permits the velocity of the air entering the firebox through the different openings to be kept at a minimum. This is a desirable feature as it is chiefly the high velocity, accompanied by the abrasive action of the pulverized coal flame, and the high temperatures attendant thereto, which causes a rapid deterioration of the brick arch and the refractories in the firebox, while if these are properly controlled the life of the fire brick will be greatly prolonged.

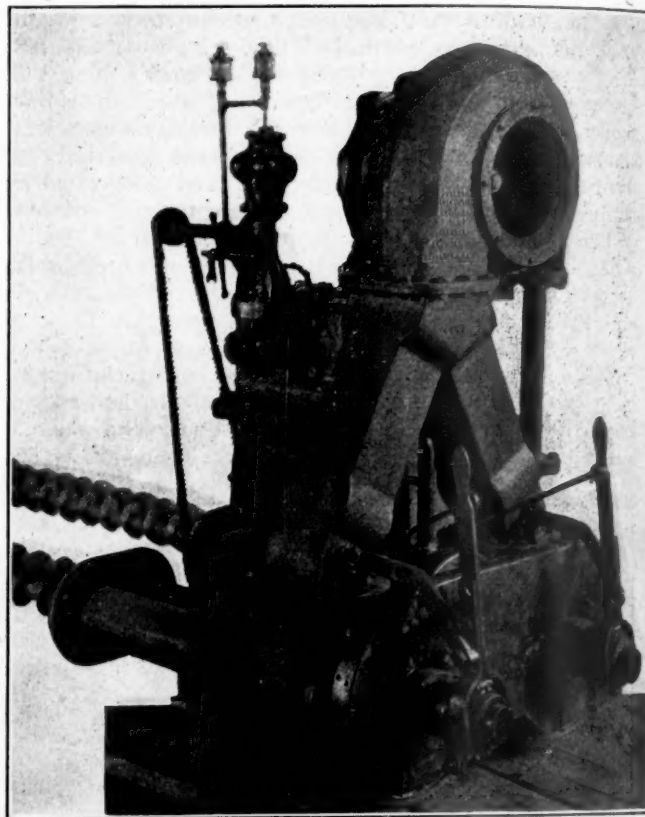
To aid in preventing and controlling excessive and destructive temperatures a pyrometer is supplied with all pulverized fuel equipment furnished by the Fuller Engineering Company. The thermo-couple of this unit projects into the firebox beneath the brick arch about midway between the front and back sheets, and an indicating unit registering directly in deg. F., in plain view of the fireman, so that by manipulating the dampers and coal feeding mechanism the temperature can be kept at the desired point.

As this is a double cab engine with a Wootten type firebox dual control is provided so that the fireman can control the apparatus either from the tender deck or from his seat in the cab. A pyrometer indicating unit, a revolution counter showing the rate of coal feed and steam gages, indicating the pressure on the turbine fan and the boiler pressure, are located in the cab.

This apparatus as installed on the Lehigh Valley locomotive is designed to feed a maximum of approximately 4,600 lb. to 4,800 lb. of coal per hour, but this amount can be varied

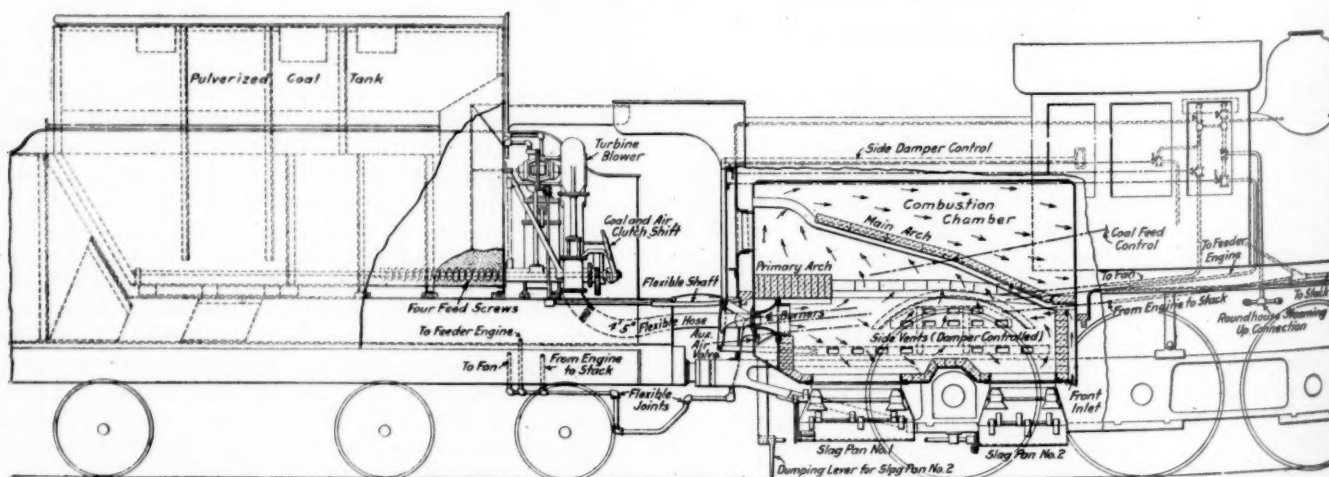
be used to feed a quantity of coal as low as 1,000 lb. or as high as 10,000 lb. an hour if desired, the only change necessary on the locomotive end being that different size burners and hose be employed for conducting the coal and air from the feeder to the burner.

The entire apparatus is assembled in one unit and can be



The Apparatus as Installed on the Tender

secured to the pulverized coal tank with 18 bolts. It can be removed at any time without in any way disturbing the alignment of the gears, pinions, feed screws or any other part of the apparatus. As will be seen in the illustrations the whole apparatus is above the deck of the tender, where it is



Sectional View Showing the Application of the Pulverized Fuel Equipment

within considerable limits by simply changing the sprocket ratio between the governor and the feeder engine, or can still further be varied by changing the ratio between the pinion and gears driving the screws. This is a highly desirable feature as in this manner the same standard equipment can

in plain view and easily accessible should any repairs or adjustments be necessary, and this feature also enables it to be applied to existing locomotives without cutting into the front water legs of the tender or without cutting below the tender deck to install it.

# General Foremen Convene to Discuss Shop Problems

Papers on Accident Prevention in Shops and Enginehouses,  
Draft Gears and Welding of Cylinders

THE FIFTEENTH CONVENTION of the International Railway General Foremen's Association was held at the Hotel Sherman, Chicago, on Sept. 2-5 with a large attendance representing all sections of the country. During the four day's sessions papers dealing with some of the important technical problems in connection with the repairing of locomotives and cars were presented and in addition labor conditions were discussed informally. The convention was opened with an invocation by Bishop Nicholson. The report of the secretary-treasurer was then read which showed the total membership to be 221, and the balance in the treasury \$752.

## Regional Director Aishton Speaks

R. H. Aishton, regional director of the Northwestern region, spoke on the present railroad situation. He emphasized the importance of securing increased production in all industries and quoted a letter from Walker D. Hines in which the director-general stated that in his opinion less progress had been made in securing increased efficiency in maintenance of equipment than in any other department. The higher railroad officers, Mr. Aishton said, come in contact with the actual operation of the roads only through statistics and because of that fact it is important that the foreman should be competent and progressive in determining the policies in his own department. He endorsed the proposal to put an end to wage controversies and restore more nearly normal conditions, characterizing this policy as necessary from a patriotic standpoint to keep America from falling behind in the contest for world trade.

## Address of President North

Following Mr. Aishton's talk L. A. North, superintendent of the Burnside shops of the Illinois Central, and president of the association, delivered an address. He spoke in part as follows: The greater the demand upon the transportation system of the United States, the greater is the responsibility of those charged with its maintenance. This association must be made one of the potent forces in the progress of transportation. During the war period many appeals were made to us to further the common cause of our country. In my opinion, the present crisis of the nation is just as acute. Let us, therefore, rise to the issue and meet it in a loyal and determined spirit and go home from this convention with a high resolve to do our utmost toward strengthening our nation's facilities.

At the conclusion of President North's address W. W. Scott made a short response in which he dwelt on the difficulties which supervising officers experience under present conditions. He stated that in his opinion the efficiency of shops and roundhouses had decreased 50 per cent in the past five years.

The Wednesday session of the convention was devoted to a discussion of methods of preventing injuries. R. C. Richards, claim agent of the Chicago & North Western, made an address in which he reviewed the results of the safety work conducted during the past nine years on the Chicago & North Western. Several papers outlining methods adopted in safety work were read, some of which are abstracted in the following:

## Safety First in Shop and Enginehouse Service

By W. T. Gale

General Foreman, Chicago & Northwestern, Chicago

The results of the safety movement on the Chicago & Northwestern have been highly gratifying. The shop committees hold semi-monthly meetings, after making inspection of the various departments. At these meetings reports are made of the unsafe condition of tools, machinery, etc., with recommendations. These local committees have accomplished most excellent results in shops and roundhouse service; all machines with gears or other working parts exposed and considered a menace to the safety of the operator have received attention and the danger, if any, averted. Line shaft couplings have sheet iron covers, the dangerous setscrew has been abolished, men have been protected from falling belts. Glass windows have been placed in all communicating doors between the various shops, in order that employees who are carrying dangerous implements in their hand, or on their shoulders can see and thus avoid injuries. Emery grinders have sheet iron guards around the wheels, and an adjustable frame with glass in it is attached to wheel guard which allows operators to grind tools without getting the flying particles of emery in their eyes; a round smooth iron cup is placed over the end of the emery wheel mandrel nut, preventing employees' working jackets from being caught upon the end of the revolving shaft. Danger sign posts are placed in proper positions in shops when repairs are being made overhead; employees' working tools, such as hammers, chisels, driving mandrels, etc., are examined by the foreman and the safety committee for cracks or breaks, and sharp splintered edges, and when found are replaced by new or repaired ones. Broken and rotted floors are repaired, automatic bells and gongs are placed on all transfer tables and moving cranes, air warning whistles for overhead cranes are a feature, the man who oils overhead machinery is supplied with a strong metal warning whistle in order that the operators of machines below will not start up machinery while he is oiling.

Floor motors in shops have 1 in. pipe guard rails placed around them, open fuses have been replaced by N. E. C. cartridge fuses, all open switches have been enclosed in steel cabinets with spring hinged doors, the replacing of all fuses is done by an electrician only, motors and generator frames have been permanently grounded to avoid accidents by shorts, open wiring has been replaced by conduit and lead cables, all line shaft motors have been equipped with safety stop control buttons, all drop light cords over machines are being removed, and replaced by individual cords, vapor proof lamps have been installed in oil houses and acetylene store houses. Electricians remove main line fuses when going above to do repair work on cranes, especially automatic floor operated cranes. Crane men are not allowed to keep anything on the crane floor with the exception of grease and waste, safety ropes are attached to cranes for descending in emergency. All employees are required to use and are furnished glass goggles for dangerous work. A large wooden platform fitting over the top of the boiler for grinding in stand pipes is a safe contrivance for men doing this work.

Hoisting chains and wire cable are regularly examined for flaws, lights have been put in dark places and roofs ventilated when necessary. Strong iron cans are used to hold scrap

paper and waste during the day, the same being taken out of the shop at night. There are local fire alarm boxes in every shop, water hose pipes and hydrants in and out of the shops, an efficient fire fighting company, a doctor upon the shop grounds with able assistants to care for emergency cases.

In engine house service, firing-up wood is not put into the cab until it is time to fire up the engine on account of men working in the cab and danger from nails in wood. Men have been instructed in the use of the blow-down pipe to see that it is laid flat upon the floor, and that connections are properly made so that there will be no danger of the pipe blowing off under pressure, etc., all of which shows that safety first is not a question of dollars and cents, but a question of saving human life, the most valuable thing in the world.

### Safety First

By B. F. Harris

General Foreman, Southern Pacific, Oakland, Cal.

To generate and maintain a living interest in the movement to protect life and preserve the body from injury, we must face a difficulty that may be relieved by one or more of the following measures: (1) Imposing penalties for gross negligence; (2) awarding premiums for creditable records; (3) publishing the names of persons injured; (4) publishing an honor roll of those who have been uninjured during the month.

Negligence may be generally divided into two classes: Neglect of the injured and neglect contributed by one or more who created the condition causing the accident, or who had guilty knowledge that such conditions existed. As any penalty, however mild, may cause resentment and produce an interest that might detract from, rather than contribute to, the effectiveness of safety first, the most convincing evidence should be required before inflicting a penalty on any party. It should then be tempered with due moderation, should it be imposed on the injured person. Mathematically stated: The punishment suffered from the accident should be subtracted from the penalty that would be due to an uninjured, or second party, who had caused it. This is a period of broken precedents; it follows that a proposal to award premiums to encourage creditable caution, productive of records free from accounts of accidents, will not be met with surprise, but may be thought possible.

Many simple rewards may be given, among them the following: (1) Cancellation of discredit for former accidents; (2) creation of new credits; (3) issuance of an annual pass for the best record in each department on every division (a full year's record included); (4) a vacation on pay. The suggestions of four classes of awards should be sufficient to start this phase of safety first growing.

When a person's name is published as the principal in an accident, there is a condition of mind produced among large bodies of men to discourage all forms of negligence and foolhardiness. Every person of good health and average understanding has enough self pride to avoid public exposure of their identity with accidents. The interest excited by exposure is not pleasant but results are usually forthcoming.

Appreciation is one of the natural cravings of every human mind. The most effective application of the principle is to publicly acknowledge the caution of employees, at each division point, shop, or yard, by posting an honor roll, each month, of all persons who have passed through the preceding month without being a party to an injury. Although it should not be expected that there will be a marked rivalry to keep one's own name on an honor roll we may well know that the acknowledgment of continued caution on the part of workmen will prevent resentment from those who are sensitive when their efforts are not recognized.

### Eliminating Eye Injuries

By L. A. North

Superintendent of Shops, Illinois Central, Burnside, Ill.

One of our greatest obstacles in the safety first movement has been in getting the employees to wear the goggles which the company has furnished to properly protect their eyes. Comment was received at the start as to the fear of eye infection. This was overcome by constructing a sterilizer so that when the goggles were returned to the tool-room, being given out to the employee on a check, they were thrown in a bath of wood alcohol, and allowed to remain for a stated length of time, after which they are removed and thoroughly dried. This in a great measure overcame any objections from this source. Then again, complaint was made that the goggles were too heavy and clouded up during the extreme warm weather. This has been overcome by securing a lighter goggle, and a better ventilated one, so that now we do not experience a great deal of trouble in getting the employee to wear the goggle and carry out the instructions that have been issued in regard to eye protection. As the eye injuries were numerous throughout the entire plant, this was one matter that required a strenuous campaign to decrease personal injury.

Papers dealing with the safety movement were also presented by C. Coleman (C. & N. W.); J. B. Wright (H. V.); J. W. Womble, W. L. Shaffer and J. Powell.

### Welding of Locomotive Cylinders

By L. A. North

The welding of locomotive cylinders and other parts has been made possible and very successful by the introduction of oxy-acetylene and electric welding. It has been possible to weld locomotive cylinders which formerly would have been scrapped or repaired with either a brass patch or a dove-tailed insert of some other metal, the weld in the majority of cases making a substantial and satisfactory job provided the expansion and contraction had been properly taken care of.

We do not feel that we have reached the highest point of efficiency in the welding of cast metals, nor are we discouraged by the few failures that we have met with in the course of the experimental stage through which we are passing. Experience has taught us that in order properly to weld a locomotive cylinder, or a casting of any make or design, it is necessary thoroughly to pre-heat to insure a uniform temperature in order properly to take care of the contraction and expansion and avoid cracking after the weld has been made and the metal has been allowed to cool off. The success of any weld of this kind depends largely on the care used in the pre-heating and the judgment of the operator making the weld. In the selection of the operator for this class of work, we cannot be too particular in securing the highest class mechanic possible, in order to avoid a failure which may cause a valuable piece of material to be thrown into scrap.

Some difficult welds have come to my observation, one in particular, where the entire upper portion of the cylinder at the port area had been totally destroyed. This was repaired by having a grey iron patch cast in the foundry, fastened to the cylinder by means of clamps and welded in place. The cylinder was preheated to a uniform temperature to take care of the expansion and contraction. After the weld had been made and the cylinder had cooled down a reinforcement was added to this weld by drilling through between the stud holes and securing the additional support by tap bolts which were tapped and screwed into the main barrel of the cylinder.

It is possible to weld broken bridges in slide valve cylinders successfully. Recently, this was done and effected a saving of two cylinders in place of the one, which was cracked, as the cylinder which was repaired was an obsolete pattern

and had we not been able to make this weld, the application of an entire pair of cylinders to the engine would have been necessary. As the engine was one that in a few years will be retired, I am satisfied that the weld will outwear the present cylinders.

Not having experience with the electric welding on cast iron, I am not prepared to enter into a discussion of this method to any great extent, but I have examined a number of castings which have been repaired with the electric welding process and careful examination failed to disclose any flaw or fault in the weld.

However, I would suggest that careful examination be made and good judgment used in selecting the welds to be made with either the oxy-acetylene process or the electrical process. Too often the practice becomes too general with the result that either a piece of defective work is allowed to be turned out of the shop, or a bad weld is made, resulting later on in an accident which gives the entire process a bad name, causing the loss of the benefit that might have been derived from the new device if good judgment and proper care were exercised in selecting the operations to be performed.

## Autogenous Welding of Cylinders and Other Parts

By J. T. Leach

General Foreman, Pennsylvania Lines, Wellsville, O.

The welding of cylinders and other castings by the carbo-hydrogen, oxy-acetylene or electric process has made great progress in the last few years. Hardly any discovery or invention has meant so much to the railroads and casting manufacturers as the various methods of welding broken or defective castings.

There was a time when it was necessary to inspect all cylinders on locomotives before they were taken into the shop for classified repairs, in order to know that no new cylinders were required, as the stock of cylinders carried by the stores department was limited, and if a broken cylinder could not be patched and the storekeeper had no casting, the locomotive had to be held awaiting repairs until such time as the material could be procured. This was an expensive arrangement at the best, especially in the last few years when power was so badly needed. With the different methods of welding cast iron, a cylinder may be cracked or broken quite badly yet it can be repaired successfully. The question arises as to the cost compared with a new cylinder, except in case of a new design where patterns have not been provided by the railroad or a foreign type of locomotive for which it would require several months to get a cylinder.

In making electric welds, in case the cylinder is only cracked, it is first necessary to pull the cylinder back in place, as nearly as possible, by the use of a rod and clamp. If this will not do the rod should be heated and the cylinder pulled up in that manner. The entire surface should be cut out V-shaped at an angle of from 45 to 55 deg. and then drilled and tapped on both sides of the crack for  $\frac{5}{8}$  in. to  $\frac{3}{4}$  in. studs. These studs should be staggered; that is, one row drilled down on the bend and the other staggered in the flat portion of the cylinder. The studs should be screwed in the cylinder  $\frac{5}{8}$  in. or  $\frac{3}{4}$  in. and then cut off about  $\frac{1}{4}$  in. from the casting. All dirt should be cleaned from the portion to be welded before starting the welding. This welding should be done at a slow rate of speed in order to keep the cast iron cylinder from becoming heated.

In welding the cylinder the ordinary grade of Swiss welding rods of  $\frac{3}{8}$  in. or  $\frac{5}{32}$  in. diameter should be used. It is not necessary to remove the bushing or do any pre-heating to get a satisfactory weld, although if this is done a much better weld would be the result.

The cost of an acetylene weld is from \$50 to \$175 for an

ordinary weld. This is an average figure, for the jobs vary so much in size and time that it is hard to arrive at a true average; however, the saving in any case amounts to several hundred dollars.

The method of welding by the oxy-acetylene process is as follows: The cracked portion should be cut out V-shaped at an angle of about 60 deg. If the broken or cracked portion is bulged out, a rod and clamp should be used to pull it up as nearly to the original position as possible. The dirt should be cleaned from the area to be welded. Then a furnace of brick should be built around the cylinder and by means of a charcoal fire or blow torch the cylinder should be heated to a cherry red. In some places an acetylene torch is used for pre-heating the cylinder, but that is an expensive method. After the cylinder has been pre-heated to the required heat welding should be begun, always maintaining the charcoal fire so the cylinder will have a uniform heat. In welding special silicon cast iron sticks are used and if this is not available a good grade of air pump rings will answer. The welding of the cylinder should be continuous and if it is a large break, one operator should relieve the other. This keeps the casting at a uniform heat. If the casting is allowed to cool, the weld will crack. The charcoal or blow torch fire should be kept up for several hours after the weld has been completed and then allowed to die out. This will insure a good weld.

Acetylene welds cost considerably more than welds made by the electric process, but this is often due in part to the lack of experience of the operator and also to the method followed. The experience I have had with the carbo-hydrogen has been limited mostly to cutting, but it is possible to get the same result from it in welding cast iron.

Other papers on the subject of autogenous welding were also prepared by W. Gale (C. & N. W.), B. F. Harris (Sou. Pac.), J. H. Frizell (A. T. & S. F.), J. W. Womble and J. Powell.

## DISCUSSION

C. D. Walker (Great Northern) advocated banding and bushing cracked cylinders on the ground that the cost of doing the work by that method was lower than when autogenous welding processes were used. Several other members concurred in this opinion, although the majority preferred to weld longitudinal cracks even though the defect could be corrected by the use of clamps or bands. J. M. Horne (M. & St. L.) stated that good results had been secured by using brass wire for cylinder welding, but this method was not generally favored due to the high cost of the wire. M. H. Westbrook (Gd. Trunk) described methods used for burning out bushings by the use of a carbon electrode. He also stated that by using sulphur on the weld the added metal was made soft so that it could be machined readily. Mr. Westbrook gave average figures for the cost of welding as follows: oxy-acetylene process, \$3.00 per hour; electric welding process, 90 cents per hour.

## Draft Gears

By J. W. Womble

There is a great diversity of opinion as to what constitutes a satisfactory friction draft gear, but in general we might say that an ideal draft gear should have not only a suitable friction capacity and travel, but it should also be positive in its nature, simple in design, of few parts, readily applied and removed from the car, and applicable to the standard pocket space. It should be so constructed that a buffing shock greater than sufficient to close the gear will not be apt to injure it in any way.

The design of the gear should be such that the frictional load is not dependent upon the speed at which the gear is closed nor should it be dependent on the internal parts of the

gear being carefully machined or requiring considerable care in fitting them together. It should be so made that it could be applied and removed from the car and the repair parts substituted, if necessary, by ordinary labor. It ought also to have sufficient area of friction faces to bring the pressure per square inch to a figure that will insure it having a satisfactory life in service.

The term friction draft gear is somewhat of a misnomer as it is both draft and buffing gear, the latter being undoubtedly its most important function. If the draft and buffing features could be divided and considered separately, no doubt better results could be obtained. Unfortunately this is not feasible and the well designed draft gear must necessarily take both of these requirements into consideration.

On this account it is advisable that a draft gear have a low capacity at the start of its movement in order to get the best results in pulling service. This only utilizes a small part of the capacity of the gear and the capacity at that part of the travel should make it possible easily to start the train. The capacity should then rise quite rapidly, but uniformly, to its ultimate load in order to absorb a large part of the buffing blow without causing too much shock to the draft sills.

#### Committee Report on Draft Gears

The committee recommended that a large proportion of gears installed be stencilled with date applied and notice to employees to report conditions and all facts whenever they are removed, this information to be used in connection with actual service tests. That draft gears be inspected and maintained at intervals depending on the kind of service. That poor gears be gradually eliminated and good gears be confined to as few as possible. That the General Foremen's Association expresses its willingness to aid the supply men in developing the best possible protection to the car against shock. That so far as possible the length, width and height of gears be brought to a standard so as to eliminate the different sizes of coupler yokes now required without sacrificing the gear efficiency.

The report is signed by W. W. Scott, (B. R. & P.) and C. F. Bauman (C. & N. W.)

#### Maintaining Draft Gears

By L. A. North

In discussing the subject of draft gears it is with the object of bringing to the attention of the general foreman, particularly the general foreman of the locomotive department, the necessity of spending more time in the car department to obtain such knowledge of car department matters as will be of benefit to them when they are advanced to the next stop in the ranks, that of master mechanic.

They should thoroughly familiarize themselves with all matters pertaining to the repairs to cars, particularly the draft rigging. From observation the logical place to examine the draft gear and the results derived from the application of the different designs of draft gears, is the repair track and the scrap pile. The damage caused from shock and rebound, due to defective draft gear, runs into millions of dollars every year. No matter what make of gear is applied to a car, unless the gear is maintained in working order, it will not properly function nor perform the duties that the designer or builder claim for it. There are a number of different friction draft gears on the market today which under test will demonstrate to the observer that the gear will perform just what the manufacturer claims for it, viz: absorb the shock and decrease the rebound, but as stated before, unless sufficient attention is paid to the maintenance and upkeep of this gear, the money expended is money thrown away.

A visit to the repair track will show end sills and draft arms broken and bent, center sills buckled up and car under-

rigging in a general dilapidated condition. In looking for the cause as the usual thing we find the draft gear worn out, inoperative and parts missing, so that the casual observer's first opinion would be that the draft gear did not perform the duties that it was intended for or designed for.

Some railroads have made it a practice to drop the draft gear when the car is placed on the repair track and make a thorough examination of the different parts of the gears to determine what parts need renewing or repairing with the result that the gear has a chance to function properly and perform the work that it was originally intended and designed for.

With the introduction of the heavy capacity cars, it has become more necessary than ever to pay particular attention to the draft rigging. Hump service is much harder on draft gear than ordinary switching service and has made it necessary to fit cars engaged in this service with substantial draft rigging and draft gear that will properly take care of and absorb the shock and rebound which comes from this service. A visit to any of the hump yards will verify this statement.

#### DISCUSSION

The advantage of draft gears of high capacity was generally recognized by the members. M. H. Westbrook (Grand Trunk) described the decrease in the ultimate strength of the draft members which is brought about by locating the center line of the buffing and pulling stresses off the center line of the sills. With the usual construction if the center line of the gear is offset 2 in. from the center line of the draft members, the strength is decreased 40 per cent.

#### Other Business

During the convention the question of admitting supervising officers of the car department to the association was considered and the by-laws were amended to make general foremen of the car department eligible for membership.

On Thursday V. R. Hawthorne, secretary of the Mechanical Section of the American Railroad Association, outlined the organization under which it was proposed to have the General Foremen's Association affiliate with the American Railroad Association as a division of the Mechanical Section. A committee was appointed to consider and report upon this matter.

The following officers were elected: President, W. T. Gale, machine foreman, Chicago & North Western; first vice-president, J. B. Wright, general foreman, Hocking Valley; second vice-president, G. H. Logan, general foreman, Chicago & North Western; third vice-president, H. E. Warner, superintendent shop, New York Central; fourth vice-president, T. J. Mullin, general foreman shop, Lake Erie & Western; secretary-treasurer, W. Hall, erecting foreman, Chicago & North Western; chairman, executive committee, C. A. Barnes, general foreman, Belt Railway of Chicago.

J. B. Evans, tax agent of the Oregon Short Line stated at a recent hearing before the Idaho State Board of Equalization, that, whereas the Interstate Commerce Commission had for a number of years employed the best scientific and engineering talent available which is still working in an endeavor to ascertain the value of the Oregon Short Line and, by reason of differences of opinion in regard to fundamental principles, had so far arrived at no conclusions, three agents of the State Board of Equalization had, after a brief investigation, been able to determine the precise value of the entire property and the relative value of every individual branch line of this system. The Board's agents recommended a radical advance in the value of the road's property. The Board of Equalization later acceded to Mr. Evans' protest, making no material increase as compared with the recommended increase of about \$16,000,000.

## General News Department

The Association of Railway Electrical Engineers will hold its eleventh annual meeting at the Morrison hotel, Chicago, on October 28 to 31 inclusive.

The coal pier of the Western Maryland, at South Baltimore, Md., was destroyed by fire on September 5; estimated loss, including coal, and number of cars, \$900,000. The pier was about 1,000 ft. long and 90 ft. high.

A delegation representing the Marine Workers' Affiliation of the Port of New York called on the Railroad Administration on Tuesday to ask that their wage adjustment be made retroactive to September, 1918, instead of March 1, 1919.

Frederic C. Howe, long an advocate of government ownership, has resigned as commissioner of the port of New York to become executive director of the conference on "democratic railroad control," organized by the Plumb Plan League, which is to hold a meeting in Washington on October 6.

A fire of unknown origin destroyed four frame buildings of the General American Tank Car Corp., at the East Chicago, Ind., plant on September 9. The buildings destroyed included the brass foundry and special construction plants. The fire will not interfere with the tank car building. The loss is estimated at approximately \$200,000.

Delegates from the southeastern and southwestern federations of railway clerks convened in a joint session at New Orleans, La., on August 23. One hundred and fifty delegates representing about 90,000 railway clerks and affiliated employees throughout the southern states were present. The convention lasted three days.

Dr. J. A. Waddell, consulting engineer, Kansas City, Mo., will present two papers before the Western Society of Engineers, Chicago, on Monday evening, September 15, entitled "The Comparative Economics of Cantilever and Suspension Bridges" and "Economic Span Lengths for Simple Truss Bridges on Various Types of Foundations."

The automatic train stop of D. H. Schwyer, of Easton, Pa., was inspected on September 5 by members of the Automatic Train Control Committee of the United States Railroad Administration. This apparatus is installed on one train, and at a number of stations, on the Colebrookdale branch of the Philadelphia & Reading, between Pottstown, Pa., and Barto.

Freight traffic on the lines entering Los Angeles, San Francisco and other central and southern California points recently disturbed by an unauthorized strike of trainmen, yardmen and shopmen is rapidly being restored to normal. The terminal yards at these points are seriously congested. It is stated that traffic will be entirely normal by the end of this week.

The American Association of Engineers will hold a meeting at the City Club, Chicago, on September 12, to discuss its work among railroad engineers. A report of the railroad engineers' salary-increase movement will be made, the activities of the railroad sections of the organization discussed and the reasons for the organization of the railroad sections will be outlined.

The Mechanical Section of the American Railroad Association has changed the effective date of sections G and K of Rule 3 of the 1918 Code of the Rules of Interchange from September 1, 1919, to March 1, 1920. This action has been taken in view of the fact that the Interstate Commerce Commission on August 29, granted an extension of six months within which to make freight cars conform to certain of the equipment standards prescribed by the Commission. A correction has also been made in Supplement No. 1 to the load-

ing rules. In figures 42 and 46, accompanying this supplement, half-inch bolts are shown passing vertically through the ends of the clamping pieces to prevent splitting. These bolts should be applied horizontally instead of vertically.

The American Association of Engineers is taking a ballot within its membership on the soundness of the Plumb Plan as a solution for the present railroad problem. A copy of the bill is being mailed to each member without comment and he is requested to make his own decision after reading the bill and vote "yes" or "no" on the propriety of favorable action on the bill by Congress.

Conspiracy to defraud the United States Government (through the operations of the New York, New Haven & Hartford Railroad) was charged in indictments on which a foreman employed by that road at its reclamation yard in South Braintree, Mass., and a junk dealer from New York City, were arrested at Boston, Mass., on September 5. The foreman, John D. Birmingham, was held in \$10,000 bail and the other man, William Natt, in \$3,000. It is charged that steel rails were wrongfully sold as low-grade scrap.

The Veteran Employees' Association of the Chicago, Milwaukee & St. Paul held its annual convention at Minneapolis on August 27 and 28. The association, which has a membership of approximately 3,000 members, is open to any employee of the Chicago, Milwaukee & St. Paul who has been in the service of that road for 25 years or longer. The officers elected at the meeting are as follows: C. W. Mitchell, president; W. B. Harter, locomotive engineer, vice-president; Grant Williams, assistant general freight agent, Chicago, secretary and treasurer. The executive board elected includes, in addition to the officers, E. W. Grant, locomotive engineer; Charles Wood, foreman, and Joseph E. Roberts, locomotive engineer, all with headquarters at Milwaukee, and L. C. Boyle, agent at Viroqua, Wis.

### New York Railroad Club Meeting

H. B. Spencer, director of the Division of Purchases, United States Railroad Administration, will address the New York Railroad Club on Friday evening, September 19, Engineering Society's Building, New York City, on "Purchasing and Stores Organizations."

### Loss and Damage Claims in Northwestern Region

The loss and damage freight claim situation in the Northwestern region is being improved rapidly because of the intensive efforts of the railroads in that region to settle and eliminate old and unsettled claims. This is evidenced by the following statement showing claims received and on hand over four months old from April 1 to July inclusive:

UNSETTLED			
April 1, 1919	May 1, 1919	June 1, 1919	July 1, 1919
141,204	129,617	118,247	104,518
OVER FOUR MONTHS OLD			
April 1, 1919	May 1, 1919	June 1, 1919	July 1, 1919
65,076	53,874	52,368	47,600

### Coal Production

The production of bituminous coal during the week ended August 30 showed a slight decrease, the output being estimated at 10,197,000 net tons as compared with 10,662,000 tons during the preceding week, according to the Geological Survey report. The week's performance, however, has been exceeded but two other times during the year, in January and in early July. The total output during the first eight months of 1919 is about 96,000,000 tons less than during the same

period of 1918, a decrease of about 25 per cent. For the week ending August 23 the percentage of full time output lost on account of car shortage was 16.2 as compared with 26.6 the week before.

### Senate Committee to Hold Hearings

At an executive session of the Senate committee on interstate commerce on Tuesday it was decided to hold some brief hearings, to begin probably next week, on various provisions of the Cummins bill. The committee has been holding executive sessions this week but considerable pressure has been brought to bear on it by representatives of some of the principal interests affected and it was decided to give an opportunity to those who wish to offer suggestions as to particular points in the bill but the hearings will be limited in order to expedite final consideration of the bill. The railroad labor organizations are particularly anxious to protest against the labor provisions of the bill, the railway executives had already filed an argument against the proposed limitation of earnings and several others interested have asked to be heard.

### Decrease in Accidents on Western Lines

Substantial progress is being made in the prevention of accidents on the Southern Pacific, the Western Pacific, the Tidewater Southern and the Deep Creek, according to reports made by R. J. Clancy, assistant to the general manager, in general charge of this phase of operation on these roads.

During the first six months of 1919 the total of all accidents regardless of time disability was 3,487, compared with 4,481 for the first six months of 1918, a decrease of 994 or 22.2 per cent. Total accidents reportable to the Interstate Commerce Commission for the first six months of 1919 were 1,249, compared with 1,570 for the first six months of 1918, a decrease of 321, or 20.4 per cent. Accidents per million locomotive miles on the Southern Pacific were 59.81 for the first six months of 1919, compared with 68.99 for the corresponding period in 1918, a decrease of 9.18 or 13.3 per cent, and industrial accidents per million man-hours were 20.91, compared with 24.60 for corresponding period in 1918, a decrease of 3.69 or 15 per cent.

Similar comparison of accidents with the corresponding period in 1917 shows a reduction of accidents in 1919 of 11.7 per million locomotive miles and of 31.3 per cent per million man-hours.

### Sixty Per Cent Efficient

The Wall Street Journal, commenting on the strength in the market of shares of stock of car building companies, and looking for reasons for this strength, remarks on the low condition of both cars and locomotives, at the present time, and quotes Brigadier-General W. W. Atterbury, vice-president of the Pennsylvania Railroad, in a recent address to the employees in one of the shops of that company, as follows:

"Prior to our entrance into the war you were on a piecework basis, as well as working on a 10-hour day. When the Government took over our railroad piecework was stopped. The output per man per hour fell 25 per cent. The shops were put on an 8-hour basis. This cut the output an additional 15 per cent, so that the output per man per day in our shops is but 60 per cent of what it was before we entered the war. In other words, it takes ten men today to do what six men did before the war. The condition of the power is getting worse and worse, bad order cars are increasing and the roadbed all over the system is suffering from lack of the ordinary maintenance and the introduction of sufficient new rails and ties."

### President's Labor Conference to Be Held October 6

The conference called by President Wilson to consider the relations between employees and the employers is to be held at the White House, Washington, on October 6, and will be attended by five persons selected by the United States Chamber of Commerce, five by the National Industrial Conference Board, fifteen by the American Federation of Labor, three by farming organizations, three by investment bankers, and fifteen representatives of the public selected by President Wilson. During the President's absence the arrangements

for the conference will be in charge of Secretary Wilson of the Department of Labor. The conference, according to the letter of invitation, is "for the purpose of reaching, if possible, some common ground of agreement and action with regard to the future conduct of industry" and for the purpose "of consulting together on the great and vital questions affecting our industrial life and their consequent effect upon all our people, to discuss such methods as have already been tried out of bringing capital and labor into close co-operation, and to canvass every relevant feature of the present industrial situation, for the purpose of enabling us to work out, if possible, in a genuine spirit of co-operation, a practicable method of association, based upon a real community of interest which will redound to the welfare of all our people."

### Heavier Loading of Cars

In a recent circular to Northwestern roads, R. H. Aishton, regional director of the Northwestern region said:

"At the present time there is a very serious box car shortage in every part of the territory in the Northwestern region. The lines in this region as a total, have 97 per cent of their ownership in box cars, which is slightly less than the number of cars they had on hand at this time last year, but the box car loading within the last ten days has increased at the rate of 3,000 to 5,000 cars per day.

"Record of a typical line in this region shows that there has been a very decided decrease in the tons loaded per car for the first seven months of 1919, as compared with the year 1918, as indicated below:

Commodity	Average loading per car		
	1918. Tons	1919. Tons	Dec. Tons
Wheat .....	40	37	3
Grain products (including flour).....	35	30	5
Coal (hard and soft).....	43	39	4
Lumber .....	29	26	3
Steel products .....	33	30	3

The average decrease in loading has been 4 tons or 12 per cent.

"If the loading at the present time was as heavy per car as last year, the car shortage would be almost entirely eliminated. Particular attention is directed to the very decided decrease in tons per car of grain products, including flour.

"It is very important that traffic officers be instructed to conduct a very intensive campaign with all shippers on the heavier loading per car. There is no way in which they can be of greater service to the shippers and the Railroad Administration today than by securing heavier loading of equipment. In addition to this, it should be the duty of all operating officers to also take action in this direction. It is only in this way, together with the prompt loading and unloading of equipment, that we can expect to meet the demands for equipment.

"Rule 9 of the Food Administration regulations, prescribes the minimum weights for various classes of commodities. This was cancelled shortly after the signing of the armistice, and loading these same quantities at the present time can only be brought about by appeals to shippers. We believe if this information is given to shippers in detail, and that specific cases of underloading, with car numbers, is called to the attention of shippers, they will see the necessity for immediately increasing the loading per car. If the same tonnage per car had been loaded this year as last year, it is estimated that 460,000 less cars would have been required during the past seven months than were actually used."

### Signal Division—A. R. A.

The annual meeting of the Signal Division of the American Railroad Association, will be held at Congress Hotel and Annex, Chicago, on September 17, 18 and 19, as heretofore announced. The business to be considered on the first day will be the reports of committees numbers 16, 2, 3 and 11. Committee 16 will report on standard clauses and sections of specifications. Committee No. 2 will present a specification for mechanical interlocking machine with improved Saxby & Farmer locking, and a new chart for use in regulating the compensation of pipe lines for temperature; also a specification for the arrangement of locking in machines to establish uniformity and sequence. Committee No. 3 will present

specifications for universal first and second range voltage electric locks for hand operated switches; for electric locks for interlocking machine, and for a switch operating and locking mechanism. Committee No. 11 will present a specification for primary battery jars.

On the second day reports will be received from committees numbers 10, 4, 8, 9 and 15. Committee No. 10 presents, as information, the requisites for design and construction of automatic train control devices adopted on February 4, last, by the committee of the United States Railroad Administration. Committee No. 4 presents a specification for direct-current motor-operated signal mechanism, and a brief report on the use of zinc-treated ties in track circuits. Committee No. 8 reports on details of numerous specifications which have been approved at previous meetings but which were referred back to the committee for a few changes, or were revised by the committee on standard clauses and sections.

Committee No. 9 presents a specification for wire joints, with five drawings illustrating proposed standards, and a specification for friction tape. Committee No. 15 will report briefly on the studies which it has made in connection with valuation; dealing with the work which has been done in connection with the government Bureau of Valuation.

The reports to be considered on the third day are those of committees numbers 17, 13, 6 and 5. Committee No. 17 presents a specification for lubricating oil for signal mechanisms; and a historical sketch. Committee No. 13 presents a specification for portable direct-current volt-meters.

Committee No. 6 presents proposed standard drawings for pipe compensator (No. 1.014) revised; for a staff tip adapter, for a switch lamp and for a switch lamp base socket; also drawings, which are submitted as information and for discussion, for a switch lamp, a train marker lamp, and for engine signal lamps.

Committee No. 5 presents a code of instructions for installation and handling of caustic soda batteries.

### Railway Earnings and Expenses for July

The Interstate Commerce Commission's monthly compilation of railway revenues and expenses, covering 185 Class I roads and 17 switching and terminal roads for July and the seven months ending July 31, is shown in the table.

	July				Seven months			
	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1919	1918	1919	1918	1919	1918	1919	1918
1. Average number miles operated.....	233,814.79	234,319.89	.....	.....	233,591.65	234,229.24	.....	.....
<b>Revenues:</b>								
2. Freight .....	\$306,642,089	\$328,414,138	\$1,311	\$1,401	\$1,920,007,554	\$1,767,115,486	\$8,220	\$7,544
3. Passenger .....	113,534,987	104,676,569	486	447	656,344,813	553,260,453	2,810	2,362
4. Mail .....	4,164,279	4,440,811	18	19	29,954,728	31,598,317	128	135
5. Express .....	7,614,389	8,580,828	32	37	60,429,575	65,403,969	258	279
6. All other transportation.....	11,858,772	12,376,813	51	53	69,857,333	69,468,060	299	297
7. Incidental .....	11,195,963	11,546,073	48	49	72,827,449	69,150,848	312	295
8. Joint facility—Cr.....	566,182	524,011	2	2	3,833,549	3,281,052	16	14
9. Joint facility—Dr.....	212,252	173,709	1	1	1,205,252	1,007,683	5	4
10. Railway operating revenues.....	455,364,409	470,385,534	1,947	2,007	2,812,049,739	2,558,270,502	12,038	10,922
<b>Expenses:</b>								
11. Maintenance of way and structures.....	66,909,678	54,194,787	286	231	437,724,004	342,695,470	1,874	1,463
12. Maintenance of equipment.....	96,529,277	83,267,697	413	355	669,480,647	546,138,187	2,866	2,332
13. Traffic .....	4,307,471	3,829,842	18	16	26,754,761	31,618,321	114	135
14. Transportation .....	177,227,893	164,852,178	758	704	1,220,438,584	1,135,655,658	5,225	4,848
15. Miscellaneous operations .....	4,214,109	3,349,936	18	14	26,926,142	22,062,086	115	94
16. General .....	10,367,509	9,134,411	44	39	71,795,353	64,977,291	307	278
17. Transportation for investment—Cr.....	529,997	475,037	2	2	3,556,287	3,320,896	15	14
18. Railway operating expenses.....	359,016,940	318,153,814	1,535	1,357	2,449,563,214	2,139,846,111	10,486	9,136
19. Net revenue from railway operations.....	96,347,469	152,231,720	412	650	362,486,525	418,424,391	1,552	1,786
20. Railway tax accruals (excluding "War Taxes")..	16,015,911	15,924,070	69	68	107,679,425	108,381,040	461	463
21. Uncollectible railway revenues.....	51,393	64,178	.....	.....	420,414	374,900	2	1
22. Railway operating income.....	80,280,165	136,243,472	343	582	254,386,686	309,668,451	1,089	1,322
23. Equipment rents (Dr. Bal.).....	2,006,679	*3,568,367	8	*14	11,507,532	10,186,468	49	43
24. Joint facility rents (Dr. Bal.).....	1,096,553	1,283,120	5	5	8,254,054	7,883,298	35	34
25. Net of items 22, 23 and 24.....	77,176,933	138,523,719	330	591	234,625,100	291,598,685	1,005	1,245
26. Ratio of operating expenses to operating revs. %	78.84	67.64	.....	.....	87.11	83.64	.....	.....

\*Credit item.

Note—The average railway operating income corresponding to item 22 above for the month of July in the three years 1914, 1915 and 1916, included in the test period of three years ended June 30, 1917, was \$344 per mile of line for the United States.

### National Association of Railroad Commissioners

The National Association of Railway and Utilities Commissioners will hold its thirty-first annual convention at the Claypool Hotel, Indianapolis, Ind., on Tuesday, October 14, and continuing probably through the week. It is expected that the opening address will be delivered by Clyde B. Aitchison, chairman of the Interstate Commerce Commission.

This association now has 52 members; the railroad or public service commission of each state—except Delaware, which has no commission—and the five following: Interstate Commerce Commission; Public Utilities Commission of the District of Columbia; Public Utilities Commission of Hawaii; the Board of Gas and Electric Light Commissioners of Massachusetts, and a second commission for New York, this state being divided into two districts.

The president of the association is Charles E. Elmquist, of Minnesota, and the secretary is James B. Walker, 49 Lafayette street, New York City.

### Exhibition at General Foremen's Convention

The following is a list of the railway supply companies which exhibited at the fifteenth annual convention of the International Railway General Foremen's Association, which was held at Chicago, September 2-5:

Ahlberg Bearing Company, Chicago.—Bearings. Represented by E. C. Lewis.  
 American Arch Company, New York City.—Security brick arch. Represented by A. W. Clokey.  
 American Flexible Bolt Company, Pittsburgh, Pa.—American flexible bolt, American reduced body staybolt, American marine hollow bolt, American hollow staybolt iron and American rivet. Represented by R. W. Benson, W. F. Heacock, L. W. Widmeier, W. W. McAllister and C. A. Seely.  
 American Steel Foundries, Chicago.—Passenger truck model descriptive of the Simplex clasp brake, models describing Simplex couplers, Simplex shelf coupler pocket, Eclipse coupler yoke, Economy draft arm. Represented by W. G. Wallace, H. J. Melchert and W. C. Walsh.  
 American Steel Treating Society, Chicago.—Represented by W. H. Eisenman.  
 Anchor Packing Company, Philadelphia, Pa.—Packings. Represented by J. P. Landreth.  
 Armstrong Brothers Tool Company, Chicago.—Tools, wrenches, etc. Represented by H. Armstrong.  
 Ashton Valve Company, The, Boston, Mass.—Gages, etc. Represented by J. W. Motherwell and J. F. Gettrust.  
 Atlantic Hand Brake Corporation, The, Buffalo, N. Y.—Hand brake. Represented by Charles E. B. Smith and J. H. Weidemiller.  
 Baldwin Locomotive Works, The, Philadelphia, Pa.—Represented by Charles H. Gaskill.

- Barco Manufacturing Company, Chicago.—Engine tender connections, car steam heat connections, roundhouse blower connections, coach yard steam heat connections, air reservoir joints, Barco crosshead and shoe. Represented by F. N. Bard, C. L. Mellor and Charles Thomas.
- Borden Company, The, Warren, Ohio.—Beaver die stocks and pipe cutters. Represented by C. A. Green and W. A. Phillis.
- Boss Nut Company, Chicago.—Lock nuts. Represented by W. G. Willcoxson.
- Broschart Threadless Pipe Coupling Company, Trenton, Mo.—Couplings and accessories. Represented by J. L. Broschart.
- Brown & Sharpe, Providence, R. I.—Tools, instruments and milling cutters. Represented by P. A. Topel and H. J. Johnson.
- Buckeye Steel Castings Company, The, Chicago.—M. C. B. Standard "D" coupler. Represented by F. J. Cooledge.
- Camel Company, Chicago.—Represented by H. E. Crer.
- Carborundum Company, Niagara Falls, N. Y.—Carborundum devices. Represented by H. P. Frost, J. W. Frazer, W. E. Knott and E. P. Ritzma.
- Chicago Pneumatic Tool Company, Chicago.—Pneumatic tools and appliances. Represented by L. C. Sprague, A. C. Anderson, C. W. Cross and H. J. Smith.
- Clark Equipment Company, Buchanan, Mich.—Twist drills, reamers, chucks, counter sinks, tool bit holders, tool bits, flue cutters and sockets. Represented by F. H. Woodward.
- Cleveland Twist Drill Company of Cleveland, Cleveland, Ohio.—Twist drills, reamers, screw extractors. Represented by H. O. White and C. J. Kirchofer.
- Collis Company, The, Clinton, Ohio.—Drill sleeves and sockets, quick change chucks and special tools. Represented by C. M. Weaks.
- Crucible Steel Company of America, Pittsburgh, Pa.—Alloy tool steels, high speed steels and railroad springs. Represented by W. M. Stevenson, F. Baakerfield, R. D. Fletcher and F. A. Lawler.
- D & M Cleaning Process, Chicago.—Process for cleaning locomotives. Represented by D. J. Lewis and F. M. Hilgerink.
- Dearborn Chemical Company, Chicago.—Literature on scientific water treatment for locomotive boilers. Represented by G. R. Carr, J. D. Purcell, W. S. Reid, I. L. Beebe and H. Rehmeier.
- Detroit Twist Drill Company, Detroit, Mich.—Drills and reamers. Represented by M. F. Crammer.
- Dixon Crucible Company, Joseph, Jersey City, N. J.—Dixon's pipe joint compound, Dixon's locomotive front end finish, locomotive hub liner lubricant, Dixon's solid belt dressing, Dixon's center plate grease and Dixon's brake cylinder grease. Represented by H. L. Hewson and F. W. Brandon.
- Duff Manufacturing Company, Pittsburgh, Pa.—Jacks. Represented by C. N. Thulin.
- Duntley-Dayton Company, Chicago.—Pneumatic tools. Represented by H. Arnold, P. D. Bates and A. C. Duntley.
- Edna Brass Manufacturing Company, The, Cincinnati, Ohio.—Lubricators and injectors, coal sprinklers, water gages and boiler appliances. Represented by E. O. Corey and H. A. Glenn.
- Flannery Bolt Company, Pittsburgh, Pa.
- Ford & Co., J. B., Wyandotte, Mich.—Wyandotte metal cleaner, Wyandotte alkali special, Wyandotte cleaner and cleanser and Wyandotte detergent. Represented by G. J. Lawrence, A. J. Ratz and H. J. Willwerth.
- Forrester Paint & Manufacturing Company, Winona, Minn.—Paints. Represented by Helen J. Caswell.
- Franclare Company, Chicago.—Hand-fired stokers. Represented by C. H. Buck.
- Franklin Railway Supply Company, New York City.—Represented by J. L. Randolph.
- Galena Signal Oil Company, Franklin, Pa.—Represented by W. H. Foster, J. A. Graham, Bloss P. Corey and W. L. Trout.
- Garlock Packing Company, Palmyra, N. Y.—Packings. Represented by C. W. Sullivan and W. H. Cook.
- Gold Car Heating & Lighting Company, New York City.—Represented by Allen Sheldon.
- Grip Nut Company, Chicago.—Grip nuts. Represented by B. G. Forsyth.
- Hardy & Co., F. A., Chicago.—Safety goggles and devices. Represented by C. A. Kingsbury.
- Hunt Spiller Manufacturing Company, Boston, Mass.—Piston valve bushings, piston valve packing, piston valve bull rings, cylinder packing, crosshead shoe, driving box shoes and wedges, knuckle pin bushings and side rod bushings. Represented by V. W. Ellet and E. J. Fuller.
- Hutchins Car Roofing Company, Detroit, Mich.—Models of dry lading, all steel roofs, Hutchins flexible all steel roofs and Hutchins improved plastic roof. Represented by A. R. Wilson and W. D. Thompson.
- Independent Pneumatic Tool Company, Chicago.—Pneumatic and electric tools, hose couplings, etc. Represented by F. J. Passino, V. W. Robinson, R. S. Cooper, J. D. Hurley, W. A. Nugent, J. G. Cowell and E. F. Bertrand.
- Ingersoll Rand Company, Chicago.—Pneumatic tools. Represented by L. W. Schnitzer, Walter Johnson and R. S. McCreadie.
- Iron City Products Company, Pittsburgh, Pa.—Jacks. Represented by C. A. Conklin, V. T. Salter, E. C. Arnold and H. K. Johnson.
- Jenkins Brothers, New York City.—Valves and injectors. Represented by B. J. Neely.
- Johns-Manville, H. W., New York City.—Packings, including air pump, industrial and brake cylinder packing sets and insulations for pipes, boilers and locomotive lagging. Represented by J. C. Younglove, P. C. Jacobs, P. R. Austin, E. H. Willard, D. H. Jennings, L. S. Wilbur and H. M. Butts.
- Keller Pneumatic Tool Company, Chicago.—Pneumatic tools. Represented by George McCabe and J. Osgood.
- Leslie Company, The, Lyndhurst, N. J.—Pressure regulators and removable coupling nuts. Represented by S. I. Leslie and J. J. Cizek.
- Liberty Steel Products Company, Chicago.—Brake beams. Represented by A. W. Preikschat, J. J. Borrowdale and S. W. Midgley.
- Liberty Tool Company.—Rivet furnace and heating torch, portable drilling presses, holding on dolly bar and heading. Represented by E. O. Grinnes, E. T. Astin, A. B. Moore and M. C. Perrill.
- Locomotive Fire-Box Company, Chicago.—Nicholson Thermic Syphons as applied to locomotive fire-boxes. Represented by John L. Nicholson and Stuart Hawley.
- Locomotive Lubricator Company, Chicago.—Represented by W. J. Schlacks.
- Locomotive Superheater Company, New York City.—Literature on locomotive superheaters. Represented by R. R. Porterfield, R. M. Osterman and G. Fogg.
- Lovejoy Tool Works, Chicago.—Jacks. Represented by W. H. Dangel.
- Mahr Manufacturing Company, Minneapolis, Minn.—No. 2 oil burning torch and large wheel rivet forges (oil burning). Represented by H. H. Warner and A. E. Stenzel.
- Manning, Maxwell & Moore, New York City.—Railroad shop tools. Represented by R. R. Cuthbertson, R. S. Dean and C. L. Brown.
- McCord & Co., Chicago.—Journal boxes. Represented by J. A. Lamon.
- Miner, W. H., Chicago.—Models of friction draft gear, hand brakes, side bearings and other appliances for cars and locomotives. Represented by A. L. Canavan and J. R. Mitchell.
- Nathan Manufacturing Company, New York City.—Injectors, lubricators, boiler checks, gage cocks and coal sprinklers. Represented by F. C. Daven, J. Ain, Richard Welsh, W. R. Walsh, Ed. S. Toothe and J. F. Farrell.
- National Boiler Washing Company, Chicago.—National hot water locomotive boiler washing system. Represented by D. Anderson.
- National Malleable Castings Company, Cleveland, Ohio.—Adjustable brake beam and wrecking hooks. Represented by L. S. Wright.
- National Railway Devices Company, Chicago.—Shoemaker vertical fire-doors. Represented by Jay G. Robinson and E. J. Gunnison.
- Ohio Injector Company, The, Chicago.—Chicago lubricator, Chicago flange oiler, Chicago non-lifting injector, Chicago U. S. standard special B injector, Ohio water glass protector, Ohio lifting injector and Chicago automatic drifting valve. Represented by A. C. Beckwith.
- Okadee Company, The, Chicago.—Okadee front end hinge, locomotive blow-off valves, tender hose couplers, Okadee water gage glass and roundhouse wash-out valves. Represented by A. G. Hollingshed, G. S. Turner and W. H. Heckman.
- O'Malley-Bear Valve Company, The, Chicago.—Multiple valves, perfection gage cocks, water glass drains and locomotive special valves. Represented by Thomas O'Malley, Ed. O'Malley, J. E. Brown, J. N. Gallagher, James Pigott, Frank Hitesman and Walter Morris.
- Oxweld Railway Service Company, Chicago.—Welding torches. Represented by W. Leighton, F. C. Hasse and W. A. Hogan.
- Paxton-Mitchell Company, The, Omaha, Neb.—Model of Paxton-Mitchell piston rod packing and Leighton balance and lubricator cylinder packing rings. Represented by J. L. Paxton and R. C. Fielding.
- Pocket List of Railroad Officials, The, New York City.—The Pocket List. Represented by C. L. Dinsmore.
- Racine Tool & Machine Company, Racine, Wis.—Machine saws. Represented by F. J. Kidd and D. B. Maxwell.
- Railway Review, Chicago.
- Rich Tool Company, Chicago.—Twist drills, reamers, milling cutters, counter bores, chucks and small tools. Represented by J. L. Crowley.
- Rivet Cutting Gun Company, Cincinnati, Ohio.—Rivet cutting gun and Cincinnati rivet hand catcher. Represented by J. M. Crowe, H. G. Dorn and F. L. McCune.
- Roberts Automatic Steam & Air Connector, Sarnia, Ont.—Represented by R. E. Allen and J. W. Roberts.
- Sargent & Co., Chicago.—"Renu" gage cock, Martin grease plugs, E. S. E. water glass cocks, Loedige blower valve and water glass protectors. Represented by George S. Garren and K. C. Robbins.
- Schroeder Headlight & Generator Company, Evansville, Ind.—Headlight with switcher lens, special lens for diffusing light on yard and switch engines, same as furnished on Government standard locomotives. Represented by J. H. Schroeder, A. H. Varney, Chicago district sales manager, E. B. Vorris and C. E. Kinnaw.
- Scully-Jones & Co., Chicago.—Chucks, spacing collars and vises. Represented by R. Beaulieu.
- Street & Co., R. R., Inc., Chicago.—Tools, chucks, pulleys, hangers, roller bearings and wrenches. Represented by C. J. Butterfuss.
- Torchweld Equipment Company, Chicago.—Oxy-acetylene welding and cutting torches. Represented by W. A. Slack and A. F. Dillon.
- U. S. Metallic Packing Company, The, Philadelphia, Pa.—Single and tandem piston packing (King type) and King type air pump packing. Represented by Harry E. Hyslop and L. B. Miller.
- Vissering Company, Henry, Chicago.—Crescent metallic piston rod and valve stem packing for saturated and superheat locomotives, sanders, duplex sander valves, bell ringers and Viloco steam compressed governors. Represented by G. S. Turner, J. M. Monroe and W. H. Heckman.
- Wells, R. W., Chicago.—Power saws, grinders and sheet metal cutters. Represented by R. W. Wells.
- Western Tool Manufacturing Company, Springfield, Ohio.—Expanding mandrels, tool holders, shop furniture, vises, emery wheel dressers and safety lathe dogs. Represented by J. Z. Wells.

### Exhibitors at Tool Foremen's Convention

In last week's issue the following name was omitted from the list of exhibitors of the American Railway Tool Foremen's Association, held at the Hotel Sherman, Chicago, August 27-29:

Duntley-Dayton Company, Chicago. Specialized display of new Duntley air drills and Duntley saphir grinder. Represented by W. O. Duntley, C. A. Duntley, P. D. Bates, Charles Booth and Henry Arnold.

## REVENUES AND EXPENSES OF RAILWAYS

SIX MONTHS OF CALENDAR YEAR, 1919

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			Net from railway operation.	Railway tax accruals.	Operating tax income (or loss).	Increase (or decrease) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Maintenance of equipment.	Traffic.	Transportation.			
Pitts. & W. Va.	66	\$503,397	\$57,794	\$642,191	\$239,169	\$7,365	\$304,093	\$31,415	\$1,004,377	156.39	-\$432,851
Phila., Bethlehem & N. E.	71	.....	.....	413,490	47,369	77,522	1,839	252,163	8,433	93.31	19,188
Pitts. & Shawmut.	103	501,666	25,640	535,974	181,012	254,335	9,961	211,471	5,820	125.96	-139,186
Pitts., Chic. & St. Louis.	2,383	28,885,853	10,311,366	43,643,414	5,811,553	13,367,246	500,617	20,374,446	1,428,883	94.53	2,385,883
Pitts., Shawmut & Northern.	204	435,357	35,953	485,117	136,793	285,924	5,868	213,377	11,002	141.01	-191,954
Port Reading	21	757,744	.....	1,259,590	102,259	91,548	52	590,602	7,444	62.87	467,647
Rich., Fred. & Pot.	81	1,970,061	1,701,863	3,689,784	346,630	516,709	25,738	1,308,384	75,913	58.68	1,648,293
Quincy, Omaha & Kansas City.	255	324,709	148,117	504,023	193,738	88,744	1,599	260,772	8,159	109.42	-47,484
Rutland	415	1,226,178	593,941	2,201,432	388,299	574,033	43,253	1,086,890	67,375	98.23	113,518
St. Joseph & Grand Island.	258	1,065,537	238,082	1,396,789	290,985	187,859	11,103	799,341	68,709	97.72	52,865
St. L., Brownsville & Mex.	548	1,597,791	718,644	2,460,168	402,760	434,914	29,293	765,153	92,888	70.11	735,160
St. L. Merchants Bridge Term.	9	.....	3,911	1,299,336	339,430	274,896	4,514	1,075,772	36,286	133.21	-431,561
St. L.-San Francisco.	4,761	23,564,450	10,047,138	35,480,668	5,797,266	7,493,495	287,408	14,188,246	1,064,345	80.90	6,776,039
St. L., San Fran. & Tex.	134	539,396	74,591	657,350	131,315	116,908	9,047	390,256	35,289	103.87	-25,465
St. L. Southwestern.	939	4,962,872	976,973	6,128,746	1,113,272	1,409,876	100,492	1,962,180	231,454	79.25	1,271,515
St. L. Southwestern of Texas.	814	2,078,443	654,551	2,925,294	805,735	1,070,289	45,536	1,550,654	141,542	123.26	-680,569
San Ant. & Aransas Pass Ry.	732	1,304,255	504,823	1,940,859	578,852	640,211	35,693	1,143,147	106,183	128.89	-560,781
Seaboard Air Line.	3,563	12,451,292	6,210,703	20,449,364	2,956,803	4,429,260	360,935	9,968,439	630,587	90.51	1,940,498
St. L. Transfer.	6	.....	.....	471,398	72,027	78,234	1,199	247,567	12,771	87.35	59,610
South Buffalo	11	210,447	.....	554,526	28,186	96,631	1,774	311,416	9,727	80.74	106,792
Southern	6,982	36,681,500	17,699,375	59,052,113	10,592,328	14,002,156	721,521	26,938,641	1,568,411	91.94	4,753,944
Southern Ry. in Mississippi.	278	490,454	269,295	818,040	222,635	124,392	13,935	471,170	24,797	104.75	-38,886
Southern Pacific	7,049	50,591,756	19,740,890	76,001,928	13,931,387	15,653,009	681,951	29,767,087	1,371,099	82.71	13,144,555
Spokane Int.	156	361,183	90,598	465,129	93,072	45,026	9,687	168,896	25,920	73.32	124,084
Southern Pacific Steamship Lines.	.....	4,599,161	286,392	5,151,585	55,249	952,238	67,473	3,868,191	152,112	98.91	56,322
Spokane, Portland & Seattle.	554	2,381,852	748,020	3,379,203	659,210	546,294	35,530	1,214,453	115,041	76.43	796,238
Staten Island Rapid Transit.	23	490,223	438,626	1,073,280	153,154	158,907	5,922	584,541	53,874	89.10	116,882
Tennessee Central	293	891,775	272,368	1,241,960	471,153	328,097	17,576	604,464	39,847	117.56	-249,101
Terminal R. R. Ass'n of St. Louis.	31	.....	19,924	1,768,520	452,336	364,504	4,770	849,933	35,818	97.68	40,965
Texarkana & Ft. Smith.	87	507,088	97,695	670,884	119,299	115,664	6,868	292,110	19,584	81.84	121,788
Texas & New Orleans.	469	2,476,558	977,752	3,740,161	1,095,169	1,095,169	28,931	1,424,112	84,693	93.18	3,485,439
Texas & Pacific.	1,946	11,209,627	4,329,214	16,344,972	2,452,434	3,449,984	145,704	7,914,274	426,029	88.78	1,832,566
Toledo & Ohio Central.	435	3,408,158	373,879	3,970,458	729,993	1,243,525	37,211	1,775,714	89,882	98.23	3,990,493
Toledo, Peoria & Western.	247	456,693	288,336	785,564	178,930	222,379	13,339	409,845	34,023	108.97	856,075
Toledo, St. L. & Western.	454	3,094,519	198,331	3,452,878	620,429	768,897	33,150	1,506,132	71,156	86.83	454,725
Trinity & Brazos Valley.	368	848,132	110,985	587,565	222,966	160,695	10,143	351,100	43,437	151.19	-300,777
Ulster & Delaware.	121	290,843	59,656	461,718	73,416	111,119	7,769	371,824	26,635	128.61	-132,101
Union R. R. of Penna.	40	.....	.....	3,757,637	471,574	1,048,164	1,604	2,017,099	46,064	95.36	174,186
Union Pacific	3,614	35,588,023	10,257,531	49,452,256	7,589,890	9,223,091	265,616	14,559,019	1,381,636	69.11	15,271,430
Vicks., Shreve, & Pacific.	171	978,211	443,981	1,532,702	280,241	346,013	15,779	598,617	48,251	84.90	231,339
Virginian Ry.	521	4,276,589	318,130	5,109,859	867,322	1,306,049	28,769	2,030,610	96,645	84.53	790,144
Wabash	2,503	16,578,492	4,696,872	22,730,851	3,371,551	4,275,348	512,186	12,005,764	676,134	91.36	1,963,039
Washington Southern	35	794,941	1,184,259	2,386,529	240,958	719,296	1,434	719,296	36,609	52.71	1,128,444
West Jersey & Seashore.	361	1,623,200	2,962,753	4,947,150	1,221,130	1,046,247	46,630	2,734,290	127,800	104.24	-259,119
Wichita Falls & N. W.	328	673,537	205,372	926,514	263,669	150,785	6,365	515,671	41,587	105.50	-51,064
Western Md.	707	5,735,298	479,351	6,763,163	1,335,521	2,256,236	107,284	2,865,369	2,551,126	101.81	-122,904
Western Pacific	1,011	4,369,043	779,729	5,358,386	1,458,907	1,998,321	71,659	1,851,907	138,040	88.05	639,443
Western Ry. of Alabama.	133	716,585	495,103	1,302,075	160,619	261,276	17,306	498,356	37,745	76.85	301,414
Wheeling & Lake Erie	511	4,686,671	300,275	5,866,278	1,144,164	1,353,347	36,428	2,391,408	151,775	89.54	594,465
Yazoo & Miss.	1,382	8,063,440	2,479,158	11,035,258	1,883,224	2,437,551	92,489	4,425,288	243,624	81.53	2,037,886
									333,802	1,702,702	255,130

## Traffic News

What is believed to be the first motor-express route tariff sheet to be compiled and put into effect has been promulgated by the Highway Transport Committee of Douglas county, Neb., and adopted by the Nebraska State Public Utilities Commission.

The St. Louis (Mo.) Eastern District Freight Traffic Committee, on a petition filed by the Baltimore & Ohio, will hold a hearing on September 16, on the cancellation of over 100 rates which have become obsolete due to the cessation of traffic in various commodities.

At a meeting of good roads advocates and representatives of highway commissioners from five southern states held at Memphis, resolutions were adopted on September 6 urging that all the southern states join in an appeal to the Railroad Administration for relief from a shortage of transportation facilities for the movement of roadbuilding material, which, it was said, is seriously hampering highway construction in the south.

Travel for the month of July in Yellowstone National Park broke all previous records. July 16 was the biggest day in the history of the park, almost a thousand people having entered that day. A total of 24,090 tourists visited the park during the month, of which 16,784 persons came in 4,457 private automobiles. While the season ends September 15, the roads leading to the park are now excellent and prevailing weather conditions are ideal.

An improved less-than-carload rail-and-Mississippi river merchandise service was inaugurated from Chicago to New Orleans, La., on August 1. On that date the Chicago & Alton commenced the operation of a through daily merchandise service from Chicago to the East St. Louis wharf of the Mississippi barge line, operated under the direction of the Division of Inland Waterways of the Railroad Administration. A comparison between the all-rail class rates and the rail-and-river rates show that the latter will produce substantial savings in the shipment of all classes of commodities.

During the month of August the roads comprising the Central Western region loaded 67,398 cars of grain as compared with 63,715 cars during the corresponding month last year, or an increase of 5.8 per cent. During the same period 48,713 cars of livestock were loaded as compared with 47,312 cars during the corresponding month last year, making an increase of 3 per cent. The loading of coal cars in this region during this period shows a decided decrease from the records for the same period last year. A total of 82,490 cars of coal were loaded during August as compared with 116,125 cars during August of last year, a decrease of 29 per cent.

Conflicting reports of the size of the Western Canadian grain crop have been somewhat cleared by the receipt of a detailed telegraphic crop report at the main offices of Canadian National Railways from the road's agents along more than 6,000 miles of line in Manitoba, Saskatchewan and Alberta. The lines of the Canadian National system in the west lie between Winnipeg and Edmonton. In these vast areas the threshing returns show yields in wheat from 6 to 30 bu. per acre in Manitoba, oats 20 to 60 bu. and barley 10 to 35 bu. In Saskatchewan wheat ranges from 3 to 25 bu. per acre, oats from 12 to 50 bu. and barley 25 to 30 bu. In Alberta the yield in wheat is from 2 to 50 bu. per acre and oats from 20 to 75 bu.

The Railroad Commission of California has granted the petition of the Oakland, Antioch & Eastern for an increase in passenger fares over the lines of that road. The new rates will put the fares of the Oakland, Antioch & Eastern on a parity with those of the federal controlled lines operating in the same district insofar as they apply to the one way rate. This road, however, provides a week end round trip tariff much lower than that

maintained by its competitor, the Southern Pacific. It is expected that the new fares will yield about \$22,100 additional revenue. It was shown at the hearing on the case that the company's payroll since 1916 had increased 72.97 per cent and that the cost of materials had increased 57.7 per cent during the same period.

A total of 6,443 cars of commercial export freight was received at North Atlantic ports during the week ended on August 27, compared with 1,248 cars for the same week of 1918. This shows an increase of 5,195 cars, or 416 per cent. Deliveries to ships during the period mentioned increased 4,490 cars, or 382 per cent, compared with the corresponding period in 1918. On August 27, 1919, there were 12,827,842 bushels of grain in elevators at North Atlantic ports. There were received during the week 6,493,916 bushels, while 6,212,053 bushels were cleared. At South Atlantic and Gulf ports there were 9,293 cars of export freight on hand as of August 26, 1919, compared with 9,894 cars on August 19 of the same month, a decrease of 691 cars. There were 8,973,336 bushels of grain stored in elevators at these ports as of August 26, representing 74.5 per cent of the total elevator capacity.

Loading reports for roads comprising the Northwestern region for the month of August show substantial decreases in the number of cars loaded on the lines of that region. The total number of revenue freight cars loaded during August, 1918, was 719,566, whereas the total number of cars loaded during August, 1919, totaled but 594,465. The commodities classified under this head show that there have been slight increases in the number of grain and grain product, livestock and lumber and forest products cars loaded, and that these increases have been more than counterbalanced by the substantial decreases in the number of cars of coal, coke and ore loaded. The total number of revenue freight cars received from connections during August, 1918, was 318,878 as compared with 321,762 cars during August, 1919.

After some controversy the traffic department of the Cincinnati (Ohio) Chamber of Commerce has secured a favorable ruling from the Railroad Administration on the proposition to continue in force the sale commutation tickets between Cincinnati, Lawrenceburg, Ohio, and Aurora. Some time ago the Baltimore & Ohio made application for authority to discontinue the sale of ten-ride commuter tickets between Cincinnati and Lawrenceburg and Cincinnati and Aurora. This move was taken because of the charge that Cincinnati salesmen were using the reduced rate ten-ride tickets to effect a cheaper through rate to such points as Connersville and Indianapolis. The Cincinnati Chamber of Commerce accordingly made a canvass of the traffic and, finding no evidence that salesmen were making such a practice, took the matter up with Railroad Administration officers at Washington with the result that no change will be made in the sale of commuter tickets at the present time.

At the direction of the Western Freight Traffic Committee the Kansas City (Mo.) District Freight Traffic Committee will hold a hearing on September 19 to establish uniform rules, regulations and charges for the fabrication in transit of iron and steel articles to, from and between points in western territory. Under the present arrangement these rules are provided for in individual lines and various committee issues. The Chicago Eastern District Freight Traffic Committee will also consider the same subject with a view to providing uniform rules, regulations and charges on all lines which will definitely describe the inbound articles of iron and steel from the rolling mills on which the privilege will be accorded, as well as the processes that will be permitted under the privilege; to determining the circumstances and conditions under which the tariff rate in effect from point of origin of the unfabricated material to destination of the fabricated material will be applied, together with a charge for the privilege which will be sufficient to reflect the value and cost of the service adequately; to providing proper and reasonable rules and regulations to enable the carriers to police the privilege which will require all fabricating plants to keep suitable records of inbound and outbound material received and forwarded from the plant as well as the tonnage received and disposed of locally.

## Commission and Court News

### Interstate Commerce Commission

The Commission began a hearing on Monday in connection with its general investigation, undertaken at the request of the director general of railroads, of the relationships between rates on grain and grain products from northwestern producing points to eastern destinations. The National Association of Railway and Utilities Commissioners, representing the state commissions, has asked that the commission postpone its investigation in view of the prospective early return of the railroads to private management, but the commission declined the petition.

### State Commissions

The Kentucky Railroad Commission has directed the Chesapeake & Ohio and the Louisville & Nashville railroads to erect a new passenger station at Covington, Ky., not later than June 1, 1920.

The Public Service Commission of New York, Second district, acting under a recent law regulating highway crossings, has ordered the erection of cautionary signals (disks, marked "RR," on posts about 5 ft. high) at all grade crossings of highways and railroads throughout the commission's jurisdiction. The posts are to be furnished by the railroads, but they are to be put up by the town or state, and must stand, as near as may be, 300 ft. from the crossing.

### Personnel of Commissions

Hon. F. B. Carvell, hitherto Minister of Public Works has been appointed chairman of the Canadian Board of Railway Commissioners, with office at Ottawa, Ont., succeeding Sir Henry Drayton, who has been appointed Minister of Finance.

### Court News

The Western Retail Lumbermen's Association, a co-operative association composed of Washington lumber corporations, has brought suit in the federal court at Spokane, Wash., against Walker D. Hines, director general of railroads, and against 23 railroads for the recovery of losses sustained in the shipment of merchandise. A list of more than 300 claims by 53 individuals and companies accompanies the complaint, which was filed by A. L. Porter, secretary of the Association. The Association has contended for some time that the proper measure of loss and damage is the market value of the goods at the time of delivery or when they should have arrived at destination and that technically the carriers have forced the members of the Association to violate the Act to Regulate commerce by accepting payment of claims for less than what they actually should have been paid. The Association also states that the carriers have repeatedly refused to pay loss and damage claims upon the basis of the market value at destination and the suit filed in the Federal court is the result of this action. The court has been asked for an injunction to prevent the carriers from paying claims on any other basis than market value at destination and also for an accounting on claim said to be paid on an improper basis.

**MEN NEEDED FOR RAILWAY CONSTRUCTION.**—Press despatches from Swift Current, Saskatchewan, Canada state that contractors on the several lines of railway that are building in that territory, also contractors on government highway work are experiencing no little difficulty in securing sufficient labor for grading operations.

## Foreign Railway News

A railroad collision between two trains near Toulouse, France, on the morning of September 5 is reported in press-despatches to have caused the deaths of 13 persons and injury to 40.

**Increased Tariffs on the Antofagasta (Chili) and Bolivia Railway.**—Cable advices from the company's manager quoted in the Railway Gazette (London) announce that the Chilean Government has authorized an increase of 15 per cent on the company's tariffs to come into force 60 days after the customary publication, but the increase on nitrate will not rule until January 1 next, and the fares on second-class passenger traffic will be increased by only 5 per cent also to date from January 1 next.

### New Railway in South Australia

The London Times states that Messrs. Timms & Kedman, railway contractors, of Adelaide, Australia, have offered to build, within three years, a railway from Adelaide to Port Darwin, to cost £8,000,000, payable in Government bonds, and provide work for 5,000 men.

### Swiss Rolling Stock for Czecho-Slovakia

LONDON.  
A news item published in the Economic Review of the Foreign Press states that the Czecho-Slovak government has ordered 20 locomotives from a Swiss firm since France cannot for the present export any locomotives.

### Railway Concessions in Brazil

LONDON.  
An extract from the South American Express states the Government will renew its concessions to the railways only on condition that large quantities of supplies and materials, including rails and rolling stock, are immediately imported.  
—London Post.

### German Locomotives in France

LONDON.  
Supplementing a news item giving the disposition of German locomotives delivered to France, under the terms of the Armistice, it has been reported that the 500 locomotives operated by the American military forces have been disposed of as follows: Poland, 100 locomotives, Roumania, 50 locomotives, Czecho-Slovakia, 92 locomotives, French railways, including Alsace-Lorraine, 250 locomotives, Oriental countries, 8 locomotives.

### Railway Traffic Reorganization

LONDON.  
An extract published in the Economic Review of the Foreign Press from Weltwirtschaftszeitung states that the Traffic Ministry of Jugo-Slavia intends to entirely reorganize the railway traffic. Locomotives and wagons will be provided, normal gage lines will be built. French and American engineers and traffic experts will be employed in addition to home experts. Marine and river shipping to provide means of transport will also be resumed.

### Machine Tools in France

LONDON.  
Before the war the majority of machines imported into France came from Germany. In 1913, France imported 28,000 machine tools at a value of 52,000,000 francs, 50 per cent of which came from Germany. During the same year 11,000 machine tools, valued at 16,000,000 francs, were exported from France. Machine tools to the value of 65,000,000 francs were produced in France in 1913. It is planned that the French aeroplane factories will be converted into plants for the manufacture of machine tools.—Le Génie Civil.

### Railway Rolling Stock in France

LONDON.

During 1913 France produced 700 locomotives, 2,000 passenger cars and 18,000 freight cars. Before the war it was necessary to import rolling stock, but today it is expected that, after the equipment plants in the North are reconstructed, France will be able to export both cars and locomotives after the present requirements of 1,000 locomotives, 2,600 passenger cars and 24,000 freight cars are provided. In 1913, France imported railway rolling stock to the value of 23,000,000 francs and exported to the value of 7,000,000 francs.—*Le Génie Civil*.

### Railway Extensions in the Federated Malay States

LONDON.

The Times Trade Supplement says that Government of the Federated Malay States is planning the expenditure of large sums to cover railway extensions, the purchase of new rolling stock, the erection of railway stations and the construction of new bridges. Fourteen locomotives have been ordered from the United States, owing to the impossibility of obtaining them from the United Kingdom, and some of these are now on the way. There is a great demand for steel for constructional purposes, especially in connection with the erection of new railway bridges.

### Brazilian Coal

According to the British Chamber of Commerce in Brazil, it is reported that experiments have recently been made by the Central Railway with briquettes composed of national coal from the Caçapava mines and American fuel. The experiments, which were carried out under strict technical requirements, gave excellent results and fully satisfied the experts who were present. It is believed, says the Chamber of Commerce, that the tests made with the Caçapava coal, from mines in the State of Sao Paulo situated close to the Central Railway, with which it will shortly be linked up by a branch line of 12 km., may eventually lead to a decrease of over 50 per cent in the imports of American coal, this leading to a very appreciable economy.

### Italy's Electric Power

LONDON.

The Financier reports that the Italian Minister of Public Works is proposing a law for the application and development of hydro-electric power for the construction of electric railways and power stations for agricultural purposes. For a period of 15 years a subvention of 40 lire per h. p. generated will be granted and freedom of taxes on house property is to be granted for the same period to all buildings, housing, generating and transformation plants. The bill provides for an annual expenditure of 80,000,000 lire, which should make it possible to obtain an increase in the power production amounting to 8,000,000,000 kilowatts, or a yearly saving of 8,000,000 tons of coal.

### Railway Developments in Norway

LONDON.

An extra from the Stavanger Aftenblad by the Economic Review of the Foreign Press states that the difficulties connected with the railway budget of Norway have been overcome. The Railway Committee insists upon an increase of Kr. 13,800,000, which is to be distributed in the following manner: Kr. 3,550,000 for the Dovre line, Kr. 3,550,000 for the Sorland line, Kr. 2,150,000 for the Rauma line, Kr. 1,600,000 for the Sunnan Grong line, Kr. 1,000,000 for the Storen line, Kr. 780,000 for alterations at Trondhjem station, and Kr. 1,170,000 for the East line railway station at Christiania. The work is planned so as to hasten the completion of those lines and a considerable amount of the money will be expended on rolling stock, rails, sleepers, bridges, etc.

### Transport Difficulties in Roumania

LONDON.

The Times Trade Supplement states that the transport system of Roumania has suffered more than any other country during the war, for that country has only 200 locomotives remaining out of the 1,200 before the war. The government has made contracts for the supply of 100 locomotives from

America, delivery to be at the rate of 10 per month, with France for 100 locomotives, two-thirds of which will be German locomotives taken over by France under the terms of the Armistice, and Canadian firms are negotiating for the supply of 800 locomotives at the rate of 10 a month. Railway trucks are very scarce, but the government is having a considerable number repaired, but many more are urgently needed.

### New South American Trans-Continental

Press despatches to the Sun (New York) from Buenos Ayres, report the arrival at Tupiza, Bolivia, of the first train over the new extension running from La Quiaca, Argentina, to Tupiza. It is now possible to go by rail from Buenos Aires to La Paz, the capital of Bolivia, but the journey still necessitates a week and a half's travel.

The La Quiaca-Tupiza section of this transcontinental line was started before the outbreak of the European war, but on account of difficulties the work was held up.

Its completion is to be noted with interest, says the despatch, for by means of it railroad transportation from the east to the west coast is assured throughout the year and will no longer be closed during the winter months when snow blocks the transandine route from Buenos Ayres to Santiago.

### Coal Resources of the World

LONDON.

A report in the Financier of August 23 states that according to a report submitted to the International Geological Congress at Toronto in August, 1913, the world's reserves of solid mineral fuel are 7,397,553 million tons of more or less easy extraction and all at a workable depth. This figure comprised bituminous or dry coal, lignite, anthracite, and anthracite coal, and was divided as follows: 3,902,944 mill. tons dry coal, 2,997,763 million tons lignite, 496,846 million tons anthracite. The distribution is shown below in million tons:

	Lignite	Coal	Anthracite	Total
America .....	2,811,906	2,271,080	22,542	5,105,528
Asia .....	111,851	760,098	407,637	1,279,586
Europe .....	36,682	693,162	54,346	784,190
Oceania .....	36,270	113,481	659	170,410
Africa .....	1,054	45,123	11,662	57,839
Totals .....	2,997,763	3,902,944	496,846	7,397,553

### Railroad Service and Fares in the Netherlands

During the war the Dutch railway train service was greatly reduced in comparison with peace times, chiefly on account of scarcity of coal for the locomotives, writes Consul Frank W. Mahin from Amsterdam. A new train schedule that went into effect July 9 increased the number of passenger trains 30 per cent, restored fast trains, and brought back the service to nearly pre-war conditions.

Fares, however, will continue high. During the war they were advanced 50 per cent in the summer, when travel was the greatest, this being ostensibly to reduce travel, as the railroads could not operate extra trains. But during all of last year the increased fares were retained, and are now to be continued under the new schedule. First class fare is 5 Dutch cents per kilometer, second class 3½, and the third class 2½. In American equivalents, these fares are about 3 cents a mile first class, 2¼ second class, and 1½ third class. Only hand baggage is free in the Netherlands. The charge for trunks averages about \$0.40 per 100 pounds per 100 miles.

### International Train Services in Europe

International train representatives of the British, French, Belgian and Central European railways have been in conference in Paris for three weeks with the object of establishing a new service of international trains. Subject to confirmation at a final meeting of all the delegates, it has been decided to run the Orient Express via the Simplon Tunnel, with through carriages between Paris and Bucharest and between Paris and Belgrade. A portion will go on to Athens.

In connection with this express there will be a train from Ostend to Milan and vice versa via Brussels. Another inter-

national express is to run between Paris, Prague and Warsaw by way of Strassburg and Nuremberg, in place of the former Nord Express.

The timetable for this train through the German countries concerned remains to be settled, and this is to be done at Strassburg in time for the final meeting in Paris. It is expected that this train will begin on September 15.

The delegates have also debated a Paris convention to take the place of the former Berne convention, dealing with waybill, tariff and other international traffic questions.

### Chinese Railways

LONDON.

Mr. Wih Kung-Cho, adviser to the President of the Republic of China, Dr. Chin-Chun Wang, Administrative of the Director of the Chinese State Railways, have been visiting Great Britain and other European countries investigating their technical and commercial resources. An interview published in the London Times Trade Supplement of August 16, 1919, states that the gross receipts of the Chinese railways for 1918 showed an increase of 25 to 30 per cent over the profits of the previous year. The increase in the cost of operation due to the war conditions has been relatively small, and the prosperity of Chinese railways is a marked contrast to conditions of railways in many European countries. Reports of brigandism have been greatly exaggerated, and there has been only one attempt at a "hold-up" for the last two years—"a record of which the United States might well be proud." A policy of uniform standardization is to be introduced on Chinese railways, which will affect locomotives, cars, trucks, etc.

### American Trade in Malaya

LONDON.

The Singapore correspondent of the London Times Trade Supplement says that a question often asked in Singapore is "Will United States business houses keep the hold on local markets they secured during the war?" and states further that the answer is that it is doubtful. There are several reasons why the Malaya importers will be quite ready to replace the materials brought into their country during the war with British goods as soon as the opportunity occurs. The chief reason is perhaps that the United States firms demand credit before shipment. A common complaint is that the goods often arrive badly packed, as a result of which losses are unduly high. Another grievance is that orders are often duplicated, merchants in America taking it upon themselves to double the order, drawing credit up to the value of the original order asked for and forwarding the rest at sight draft. Another was the practice of selling goods ordered by one man to another at a higher rate during transit.

The correspondent goes on to say that the importer in Malaya knows that as a general rule he can rely on British quality and British merchants' methods of doing business, so that the British merchants may be assured that their goods will be welcomed. He closes with the general opinion that Malaya is likely to enjoy a period of unexampled prosperity.

### Hydro-Electric Power in Norway

LONDON.

The London Times Engineering Supplement for August states that Norway's wealth of water power is at present attracting much attention, as according to official statistics the country boasts an aggregate of 15,000,000 hp. of water power throughout the year, a figure which, in comparison with other countries where the figures generally apply to only nine months of the year, is more imposing. Nor does this figure exhaust the total power, because several waterfalls of some importance are excluded, as are also a series with but limited fall, although some of them are quite suitable for exploitation. The extent and power of Norway's water power has greatly increased, and the country has earned such vast sums during the war it is now able to finance undertakings which would formerly have been beyond its powers.

An adequate supply of electric energy for the ordinary requirements of the population naturally claims the first place. If, taking into account the prospective increase in the popu-

lation, 5,000,000 hp. are allowed for this, 10,000,000 hp. would remain for industrial purposes. The Norwegian Hydro-Electric Company has in ten years exploited 300,000 hp. Electric iron smelting and steel production are among the industries which should need electric energy, and in the production of which Norway has rather lagged behind. Export of electric current to Denmark and Sweden is also likely to require a considerable amount of current, the estimated figure being from 200,000 to 500,000 hp.

### The Alsace-Lorraine Railways

A new organization has been set up for the railways of Alsace-Lorraine. According to the terms of a decree by the commissary-general of the Republic at Strasburg the system is to be operated on behalf of the State by an administrative body with headquarters at Strasburg, under the authority of the commissary-general. The administrative body will consist of a *directeur*, or manager, and a council of 21 members, including representatives of Chambers of Commerce and industrial and agricultural associations in the territories traversed by the railways. M. Lebert, assistant operating manager of the state railways, has been appointed *directeur*, and the other principal officers have been selected from among high officers on the Est, P.L.M., Orleans and State railways. The railways of Alsace-Lorraine were from 1871 until the end of the war in the unique position of being the only "Imperial" railways in the German Empire, the other State railways being vested in individual states forming component parts of the Empire. The existing system consists in part of lines originally built and owned by the Est and ceded to the German Empire under the terms of the Treaty of Versailles and now restored to France, and in part of extensions built by Germany since 1871. Ever since the Franco-Prussian War Germany has regarded the Alsace-Lorraine railways chiefly from the standpoint of strategic lines, although their commercial value has never been overlooked and tracks, stations and sidings have been laid out and loading and unloading accommodation provided in accordance with military requirements in the event of a European war.

### Railway Construction in Poland

According to the *Przegląd Wieczorny* (Warsaw), the Ministry of Railways has decided to commence the construction of 350 km. of railway lines annually for the next two years and a half, making a total, for that period, of about 875 km. (543 miles). It has been agreed that the most important and most urgent of the proposed constructions are the following:

(1) The creation of direct communication between Warsaw and Poznan (Posen) by the construction of a new line from Kutno to Strzalkowo. This is to be a first-class double track line, and the sum of 800,000 marks per km. has been allotted to it in the estimates. In view of the easy "terrain," it is considered that this sum should be ample for the purpose.

(2) The connection Lodz-Kutno-Plock-Sierpce.

(3) The reconstruction of the narrow gage railway Sierpce-Nasiesk as a line of normal gage.

(4) The creation of better communication between Lwow (Lemberg) and Warsaw by the construction of a line from Zawada to Lublin to take the place of the present connection Rawa Ruska-Rejowiec-Lublin. The Ministry is also in possession of a complete scheme for a line from Rzeszow to Nisko, in Galicia. Some of the Galician members of the Sejur (Parliament) are making energetic efforts to secure the speedy construction of this line.

The solution of the problem of Warsaw's railway connections has also been considered. It is proposed to build a station for passenger traffic on either side of the Vistula, and to connect them by a line running underground along the Jerusalem avenue and crossing the river obliquely by a new bridge. In addition separate stations for goods traffic are proposed on both sides of the Vistula. It is estimated that the completion of the Warsaw scheme will require 10 years, and that the cost (which has not yet been ascertained) will be not less than 100,000,000 marks. The reconstruction and

restoration of stations, stores and similar buildings destroyed or fallen into disrepair in consequence of the war is expected to absorb 120,000,000 marks.

### Enginemen Receive Increases in Great Britain

LONDON.

The locomotive drivers, firemen and cleaners after several months of negotiations (since December, 1918) have agreed with the English Board of Trade on a standard daily wage, which is a real standard when compared to the varied scale of wages followed by the railways in the United States. This new rate is based entirely on the time of service of the men and represents an increase of approximately 100 per cent of the prewar wage. Last year these men, who number in the neighborhood of 65,000, were granted a war bonus of 33 shillings per week to cover the increased cost of living, the expectation being that as the cost of living diminished it would be removed. Since the signing of the armistice, there having been no indication of a reduction in the cost of living the men have been seeking to have the 33 shilling bonus included in their regular wage, and although they agreed last April that the existing wages plus the war bonus was to remain in effect during the present year, they made further demands which were used as the basis for settlement. The demands were first placed before the Railway Executive Committee of Great Britain, which made counter proposals as indicated in the table attached which were refused by the men. The matter was then taken up by the English Board of Trade which after some negotiations finally agreed with the men on the schedule which is also shown in the table. The wages shown in the table refer to a daily wage for an eight-hour day, except where otherwise noted, and it includes 33 shillings per week war bonus.

	Railway Executive Committee's award	Railway men's demands	Board of Trade's first award	Board of Trade's second award, which was accepted
<b>Locomotive engineers and motor-men—</b>				
First and second years.....	7s. 6d. to	12s.	11s.	12s.
Third and fourth years.....	12s. in the	14s.	13s.	13s.
Fifth, sixth and seventh years	eleventh	16s.	14s.	14s.
Eighth year and onwards....	year	16s.	14s.	15s.
<b>Locomotive firemen and assistant motor-men—</b>				
First and second years.....	5s. 6d. to	9s. 6d.	8s.	9s. 6d.
Third and fourth years.....	6s.	10s. 6d.	9s.	10s. 6d.
Fifth year and onwards.....		11s. 6d.	10s.	11s.
<b>Cleaners—</b>				
Sixteen years old and under..	28s. to 41s.	8s.	4s.	4s.
Seventeen years old.....	per	8s.	5s.	5s.
Eighteen and 19 years old....	week	8s.	6s.	6s.
Twenty years old and over...		8s. 6d.	7s.	7s.

Shillings (approx. 24 cents). Pence (approx. 2 cents).

### Britain's Ministry of Transport Act

The Ministry of Transport Act has at length received the Royal Assent and, apart from the merits, it is interesting to note, says the Railway Gazette, London, how long and severe has been the examination and criticism which it has received from both Houses of Parliament. Not since the days before the war of highly contentious measures of a party political kind has there been such a long contested bill. Party politics did not much enter into the matter, but their place was taken by suspicion of bureaucracy, important vested interests and economic industrial and financial considerations.

Introduced in the House of Commons as long ago as February 26 last, the second reading debate lasted for two days—March 17 and 18. The committee stage began on April 1, and a standing committee labored at it, generally for about four hours a day, for 18 days spread over the time till May 28. The report stage in the House did not begin till July 1, and it continued for four days ending on July 8. The third reading was disposed of in one day—July 10.

The first reading in the House of Lords was formal, but the second reading debate occupied two days—July 21 and 23. On the movement that the bill be considered in committee, Lord Salisbury moved that there be an instruction that

they could consider the bill in two parts, taking the part relating to railways and light railways and what he termed certain urgent matters at once, and leaving all the other proposed powers for future consideration. If adopted, this proposal would have involved the House of Lords in one of the most momentous decisions it has taken in the last few years, and would have precipitated a conflict with the House of Commons, but wiser counsels prevailed and the bill was referred to committee. The committee stage began on July 29 and ended on August 6, after occupying parts of five days. The report stage was disposed of on August 11, and the third reading on the following day.

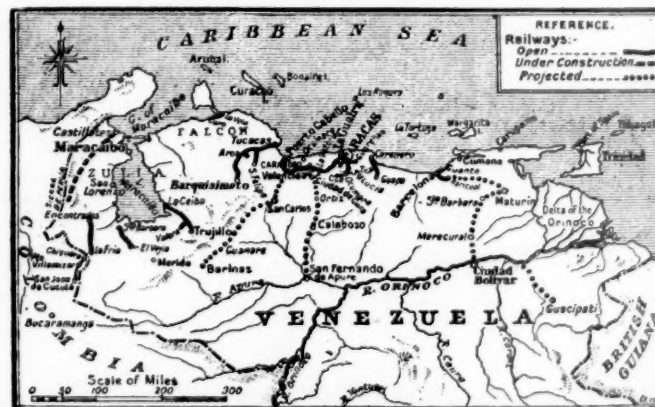
The adjustment of amendments between the two Houses was carried out on August 12 and 13, and on the latter day the Royal Assent was given.

The measure was thus before the two Houses on no fewer than 38 days, spread over a period of about five and a half months.

### Railroad Developments Needed in Venezuela

LONDON.

In commenting on the mission of a special commissioner sent to Great Britain by the government of Venezuela for the purpose of obtaining co-operation in developing that country, the London Times Trade Supplement published some interesting facts regarding the need of improved transportation facilities. It indicates on a map, which is reproduced herewith, the railways that are already in operation, those under construction, and those contemplated. Venezuela is primarily an agricultural country, but there are great opportunities for development in petroleum and coal. Having an area of 364,000 square miles, the country has less than 700 miles of railways, and these are all located on the northern coast. They start from the Caribbean seaboard and run inland at different regions. About half of the railways were constructed by the British, the most flourishing line connect-



Railways of Venezuela Showing the Lines Open, Those Under Construction and New Lines Under Consideration

ing the seaport of La Guaira with the capital, Caracas. The Venezuelan Central, a British railway, operates between the capital and Sta. Teresa, and extends to Ocumare.

In the Maracaibo Lake region there is at Tucacas the sea terminus of another British line, the Bolivar Railway Company, with about 170 miles of track; the first strip was built to serve the British-owned copper mines of Aroa, extensions afterwards running to Barquisimeto and from Palmasola to San Felipe. The Puerto Cabello and Valencia line is also British, connecting with the German-built Gran Ferrocarril de Venezuela running from Caracas to Valencia.

Local railway lines have also been built by British interests within the last few years in the Maracaibo region to serve the special needs of sugar, coal and oil companies. Of other lines, that from Guanta to Barcelona and Naricome serves a series of coal fields; the Encontrados line, some day to be extended to the Colombian frontier, is a coffee carrier; the Sta. Barbara-El Vejia line serves sugar regions, but needs rebuilding; that from La Ceiba to Trujillo and Valera also

serves agricultural regions, while the little La Vea-Coro line connects the two sides of Paraguana peninsula. The Carenero line is another example of a short strip giving access to a port, while a section is under construction from the Perija coal fields to Castilletes, above the Maracaibo bar.

Venezuela's most pressing need is for roads and railroads to permit the movement of trade with the interior plains, where large herds of cattle and extensive agricultural areas exist. One of the most important railway projects is that connecting San Fernando de Apur , the greatest cattle center, with the Valencia line, by way of Calabozo, Ciudad de Cura, Victoria and Maracay. At present herds are sent on the hoof by poor roads to Puerto Cabello, the journey taking several weeks. Another extension projected runs from Valencia in a southerly direction, again for the purpose of penetrating rich pastoral country, passing through Guanare to Barinas. A third plan is to put the Orinoco river in rail communication with the Caribbean coast by an extension of the Barcelona line, by way of Maturin, to Ciudad Bolivar. The Barcelona line serving coal fields would then extend to great gold mining, petroleum and asphalt belts. Altogether, 800 miles of new line are badly needed.

### Rolling Stock and Working Conditions in France

LONDON, Eng.

The 50,000 freight cars lost by the French railways in August, 1914, during the first period of invasion, represented, says Le G nie Civil, more than one-tenth of the stock used on the French railways; the density of the traffic soon crippled those which remained, and the lack of repair-shops and construction works (many of which were in invaded regions), together with the scarcity of labor, prevented the upkeep and renewal from being carried out normally. This bad condition of the rolling stock gave rise to many derailments and collisions due to the breaking of couplings, with the result that the shortage of rolling stock was further increased. However, in April, 1918, at the time of the German advance on Amiens, the Northern Railway was able to arrange for 170 trains per day for the transport of troops alone, making a total of 20,000 loaded wagons; in August, 1918, the figure rose to 25,000 wagons.

After the armistice, owing to the sudden advance of the armies as far as Alsace and Lorraine, the distances to be covered for the transport of supplies and the service in the liberated regions, were all at once considerably lengthened, so that the same rolling stock had to cover much more ground, which is equivalent to a proportional decrease in the material available. Other causes further accentuated the crisis. The German stock, delivered in accordance with the stipulations of the armistice, but with much delay, only slightly relieved this state of affairs at the outset. The scarcity of lubricating materials and the formidable distances covered between the Franco-Italian front and the Russian or Balkan fronts, had reduced engines and freight cars to such a condition that many had to be rejected, while the others left still much to be desired. The use of this rolling stock (4,300 engines and 130,000 freight cars) made it necessary to employ, in addition, German drivers and stokers, who showed little zeal and were even suspected of wilful negligence which was eliminated as quickly as possible; then, again, spare parts could only be found in German depots or works.

The following table, taken from an official document, shows the differences occurring between 1914 and the beginning of 1919 in French rolling stock:

	Existing stock		Stock laying idle owing to damage	
	1914	1919	1914	1919
Locomotive engines ..	13,000	14,574	1,720 (13.2%)	2,834 (19.5%)
Freight cars .....	376,000	368,000	14,840 (4.0%)	38,520 (10.5%)
Passenger cars .....	49,380	43,956	4,474 (9.1%)	7,817 (18.0%)

As regards the French employees, their number has decreased by nearly 20 per cent between August 1, 1914, and January 1, 1919 (332,700 men against 280,660). The smaller efficiency of women workers (used even in the laborious work of handling luggage), the ravages of the influenza epidemic made in the ranks of a much overworked staff, especially in the army, and lastly the demobilization of a large number of employees mobilized for the working of railways, will explain the difficult position in which the great companies have found themselves during the last few months in this connection as in others. (*Le G nie Civil*.)

### English Railway Stockholders Association

LONDON, August 6, 1919.

The English Railway Stockholders' Protection Association, Ltd., which, as noted recently in these columns, has been formed by an influential group of stockholders, results from the anxiety as to the future of the English and Welsh railways. An executive committee, representing very large holdings in English railway stocks, has been appointed, and the association has been registered under the Companies Act, with limited liability.

The sole object of the association is to safeguard the interests of all stockholders of the English and Welsh railway companies in the final settlement of the questions arising out of the government control of the railways. The main problems that have to be dealt with are (1) the depreciation of permanent way and rolling stock; (2) the greatly increased cost of operation due to the payment of higher wages to employees and higher prices for materials; and (3) the difficulties attending the issue of new capital or of loans for the development of the railways.

The association is neither for nor against nationalization. It is not political. It stands for no policy other than the policy of fair play for all, whatever the decision of Parliament as to the future of English and Welsh railways.

The appeal of the association is to a large portion of the general public, both directly as individual stockholders, and indirectly through their interest in banks, insurance companies, charitable, educational and religious institutions, friendly societies, trade unions and limited companies, the majority of which have a portion of their funds invested in English railway securities.

The total holdings in stocks of the railways of the United Kingdom represent a face value of no less than £1,350,000,000. The number of stockholders is probably not less than one and a half millions.

In Scotland there is a similar association, with a membership of over 30,000, which has already performed valuable service on behalf of the Scottish railway shareholders.

The association has a definite plan of campaign. It will give the legislature, royal commissions or committees dealing with the affairs of the railways, facilities for ascertaining the views of the stockholders, and will demonstrate the real merits of their claims. It will watch over all legislation affecting the stockholders, it will place their case adequately before the press, it will hold meetings and establish branches in England and Wales, it will collect and publish all necessary information, and generally give all possible assistance to its members. It is assured beforehand of the sympathy of the boards of management of many of the railways and the support of influential institutions.

A single subscription only is required from a stockholder or bondholder to become a member of the association, the sum to be not more than 42s. and not less than 2s. 6d. Any subscription between these two limits may be sent; it is left to the subscriber to decide the amount, having regard to his interests in English railways. Beyond this, there will be no liability except a contingent contribution not exceeding one shilling (if required) towards the cost of winding up the association.

The secretary is A. W. Burchell, 5 The Sanctuary, Westminster, London.

### The Nationalized Railways of Italy

LONDON.

The London Times Trade Supplement of August 16 publishes a review of a book which has just been written by Signor Pietro Lanino,\* whose reputation as a railway authority is undisputed. The purpose of the book is to outline a series of suggestions as to the best means by which the Italian State railways can be developed and their deficiencies remedied, and the criticisms of nationalization which it contains are merely incidental to the main subject. In spite of this, or rather because of it, Signor Lanino's remarks on the beginnings, progress, and effects of public ownership are extremely valuable, for they have all the weight of testimony

\* "Per lo Sviluppo e l'Organizzazione dei nostri Trasporti Ferroviari." By Pietro Lanino. Published by Nicola Zanichelli, Bologna.

given by an independent witness who is nowhere concerned to make out a case for or against nationalization.

The state-owned Italian lines have a length of 8,700 miles, and are the most extensive railway system in Europe under one management. They were built by a number of private companies, and in the year 1905 were taken over by the government in consequence of a general strike of railway workers which broke out that year and was of an alarming political character.

The private companies paid a tax of 27.5 per cent of their revenue to the government, averaging an amount of £2,560,000 annually. The first year after nationalization the sum had dropped to £1,920,000, and in 1913-14 to £1,120,000, while the year 1915 showed a deficit. The total investment aggregates about £280,000,000.

#### LACK OF ENTERPRISE

Double-tracking was initiated under private management, but progress has been slow since the state entered the field, and today only 23 per cent of the system has double tracks.

Italy's mountain railways are only one-seventh of her lines, but they absorb 40 per cent of the total consumption of coal. Electrification is therefore a pressing necessity from the point of view of economy, and we find that the private companies had electrified 84 miles of most difficult road between the years 1899 and 1902. During the first 12 years of government administration less than 154 miles were electrified, and at the present rate of progress it would take 100 years to electrify the 2,175 miles which it would be profitable to change.

From 1885 to 1905 the private companies actively developed local traffic resources, especially along the Adriatic, organized the export of Italian agricultural and industrial products to England and Central Europe, and started the express service of the country by inaugurating a fast train from Milan to Rome.

Since 1905 no measures have been taken by the state to encourage production and exports. The railway no longer seeks the customers. It is the customer who bows down to the bureaucrat in the railway office.

#### UNCEASING FRICTION

According to Signor Lanino, the private companies built their extensions in a careful, solid way, making money for their shareholders, and satisfying the state's legitimate requirements. Under public ownership construction has proceeded slowly, the original plans of 1905 have not yet been carried out, and the expense is so much greater than was anticipated that an original estimate of £17,280,000 has had to be altered to £25,560,000. The timidity which caused the government to conceal the sum necessary for the reorganization of the railways in 1905 still persists. Conflicting local interests hinder the completion of new projects. There is unceasing friction between the officials of the departments of Railway Administration and Public Works, and in the end nothing is accomplished.

But the great and all-absorbing question of the Italian state railways is, and always has been, labor. As Signor Lanino truthfully remarks, the employees are not considered as such, but as electors. The state has been unable to attract a high class of workers, or to increase the efficiency of those whom it has succeeded in obtaining. Discipline cannot be maintained, for any official who attempts to enforce it finds himself subjected to political pressure. The payroll amounts to £20,000,000, an increase of £8,000,000 since the beginning of the war. Operating expenses have risen from 68.8 per cent under private management to 82 per cent, of which increase labor represents six per cent. The total number of workers had increased 47 per cent and the wage-bill 53 per cent by 1914, and even in 1907, or two years after nationalization took place, the office force numbered 13,000 persons, as against 8,000 in 1905. On certain of the secondary lines the average number of passengers carried daily is barely equal to the number of employees. From 1911 to 1914 it was necessary to add £840,000 to passenger fares and £480,000 to freights, in order to meet labor's demands for increased pay. In the higher positions the bureaucrat, backed by his powerful political friends, is slowly but surely replacing the trained official, to the further deterioration of the service.

## Equipment and Supplies

### Locomotive Deliveries Week Ended August 23

New locomotives were shipped during the week ended August 23, as follows:

Works	Road	Number	Type
American	A. C. L.	6	USRA Pacific
		6	
	S. A. L.	6	USRA Santa Fe
	P. L. W.	2	Santa Fe
	A. T. & S. F.	2	Santa Fe
Baldwin	C. & O.	1	USRA Mallet
	P. L. W.	4	USRA Santa Fe
	T. & P.	1	USRA Mikado
	N. & W.	1	Mallet
		17	
Total		23	

### Freight Cars

THE BALTIMORE & OHIO is inquiring for 8 50-ton steel hopper cars.

M. C. FAIRCHILD & Co., New York, are inquiring for 50 20-ton gondola cars for export.

THE EASTMAN KODAK COMPANY, Rochester, N. Y., is inquiring for one special 40-ft. 30-ton flat car.

THE UNITED STATES COAL & COKE COMPANY, Pittsburgh, Pa., is inquiring for one motor-driven car.

COSDEN & Co., Tulsa, Okla., has ordered one 50-ton 10,000-gal. insulated tank car from the American Car & Foundry Company.

THE MADEIRA HILL, CLARK COAL COMPANY, Philadelphia, Pa., has ordered 75 wooden mine cars from the American Car & Foundry Company.

THE WARNER SUGAR REFINING COMPANY, New York, has ordered four 40-ton 8,000-gal. tank cars from the American Car & Foundry Company for export.

THE PETROLEUM REFINING COMPANY, Cincinnati, Ohio, has ordered 16 8,050-gal. and 2 6,500-gal. tank cars from the Pennsylvania Tank Car Company.

### Signaling

THE PENNSYLVANIA, WESTERN LINES, has ordered a 28-lever Saxby & Farmer interlocking machine from the Union Switch & Signal Company, Swissvale, Pa., for use at Newburg, Ohio. Another machine of the same type with a 36-lever frame, furnished by the same company is being installed by railroad forces at Brady Lake, Ohio.

### Miscellaneous

The Home Oil Refining Company of Texas has been awarded a contract for the furnishing of oil to the St. Louis-San Francisco for five years. Neither the quantity of oil to be supplied nor the price to be paid has been announced. The oil will be delivered to the road at Oklahoma City, Okla., Fort Worth, Tex., and Monette, Mo.

"No Accident Day" was successfully observed on the Tyron division of the Pennsylvania Railroad on Tuesday, August 26, the day passing without a single accident of any description. J. K. Johnston, superintendent of the Tyron division, said that "No Accident Day" would be observed at intervals on his division.

Pennsylvania Railroad stockholders on August 1 numbered 112,216, an increase of 618, compared with July 1, and 8,033 compared with August 1, 1918. The average holding on August 1 was 88.95 shares. In two years the average has been reduced from 105.95. About 30 per cent of the \$500,000,000 capital stock is held by women.

## Supply Trade News

**Richard Pintsch**, inventor of the Pintsch gas lighting system, is reported dead at Berlin, Germany, at the age of 80.

**The Hutchins Car Roofing Company**, Chicago, has opened an office in the Railway Exchange building, St. Louis, Mo., in charge of **Charles F. Pace** as district sales manager.

**George W. Bender**, district manager in charge of the New York office of **Mudge & Co.**, Chicago, has been promoted to manager of sales and service with headquarters in Chicago.



G. W. Bender

Mr. Bender was born at Pittsburgh, Pa., on August 20, 1884. At the age of 17, he entered the engineering department of the Pressed Steel Car Company of that city. In 1906, he accepted a position with the American Locomotive Company where he had charge of the extra work order department. In 1910, he became associated with Mudge & Co. as chief draftsman and subsequently was given charge of the mechanical department. Later he was made assistant to the vice-president, a position he

held until his appointment in April, 1918, as eastern manager in the New England and Atlantic Coast states in which capacity he served until his recent promotion.

**The Chicago Pneumatic Tool Company**, Chicago, announces the appointment of **Fred Gehbauer**, as special Navy Yard representative, with headquarters at the Philadelphia office, 1740 Market street.

**H. W. Johns-Manville Company**, New York, has commenced excavating for a large plant at Waukegan, Ill. No contracts have been let for the building itself as the type of construction and the specifications have not been fully decided upon.

**William H. Bruce**, sales manager of the **Mark Manufacturing Company**, Chicago, with office at Minneapolis, Minn., has been appointed southern sales manager for this firm and also for the **Steel & Tube Company of America** with headquarters at New Orleans, La.

**Paul Sutcliffe**, advertising manager of the **Edison Storage Battery Company**, Orange, N. J., has been appointed manager of the industrial truck and tractor department of the same company. Mr. Sutcliffe has been with the Edison Storage Battery Company for the past five years.

**The Bucyrus Company**, South Milwaukee, Wis., announces that it has opened a Cleveland office at 808 American Trust building in charge of **E. G. Lewis**, formerly with the New York office of the **Bucyrus Company** and more recently president of the **New Jersey Slag Products Company**, Dover, N. J.

**The Locomotive Crane Company of America**, Chicago, has been chartered by **Charles** and **Robert Vergan** with a capitalization of \$300,000. The new company is manufacturing a small locomotive-type road crane with a capacity of four tons which will handle a  $\frac{3}{4}$  yd. clam shell bucket and which can be used with block attachment. The company is at present

negotiating a contract for a large manufacturing plant to be constructed at Clearing, Ill., upon which operations will commence within the next 90 days.

**W. C. Epstein**, formerly in the operating department of the **American Brake Shoe & Foundry Company**, Chicago, and more recently in charge of the production engineering division of the **Bureau of Aircraft Production** at New York, has been appointed general superintendent of the **Duff Manufacturing Company**, Pittsburgh, Pa., with office in that city.

**Doheny, Quinlan & Robertson, Ltd.**, Montreal, Que., has been incorporated under the **Dominion Companies Act** with an authorized capital of \$2,000,000 to conduct a general and railway contracting business, and act as engineer and builder of allied work. The directors are: **H. Doheny**, **H. Quinlan**, **A. W. Robertson**, **G. A. Campbell** and **J. Karry**. Mr. Doheny has been engaged in the railway contracting business for some years and **H. Quinlan** and **A. W. Robertson** have been associated in government construction work.

**The Fastfeed Drill & Tool Corporation**, recently incorporated under the laws of the state of New York with an authorized capital of \$500,000, has purchased the factory, together with the business and good will, of the **McCarthy Drill & Tool Corp.**, Toledo, Ohio. **John D. McGrath**, formerly treasurer of the **McCarthy Drill & Tool Corp.**, is managing director of the new organization which will continue to operate the plant in Toledo. Additions to the present equipment are planned for the near future.

**John Kelly**, who for a number of years was New York district manager of the **Edison Storage Battery Company**, has been appointed general sales manager of the company,



John Kelly

with headquarters at Orange, N. J. This promotion for Mr. Kelly follows closely upon his promotion, on July 1 of this year, to the position of assistant general sales manager. Mr. Kelly brings to his new position the experience of a long and varied career in the storage battery, electric vehicle and accessory business. For nine and one-half years he was district manager of the New York office of the **Edison Storage Battery Company**. Before that he had been a salesman for the **Westinghouse Storage Battery Company** for two years, for the **Swinehart Tire & Rubber Company** for three years, for the **Firestone Tire & Rubber Company** for two years, and for the **New York Edison Company** for nearly four years.

**Harry W. Benkart**, manufacturers' agent at Buffalo, N. Y., has been appointed representative of the **Lakewood Engineering Company** at Buffalo, with offices in the **Ellicott Square** building. Mr. Benkart has had about ten years' experience in the construction business, the greater portion of which was spent with the **Dravo Construction Company** in the position of superintendent of construction. For the past five years he has been an agent for contractors' equipment including the **Lakewood line**. In joining the **Lakewood organization**, he now discontinues all other lines.

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**A. A. Schneider**, formerly with the raw materials department of the **Midvale Steel & Ordnance Company** and the **Cambria Steel Company**, has been appointed manager of the newly created raw materials division of the **American Steel Export Company**. Prior to entering military service in 1917 as a lieutenant of field artillery, Mr. Schneider had, for several years, been assistant to **H. F. Black** of the **Midvale** and

Cambria companies of Pittsburgh. In his new field, Mr. Schneider will handle imports, exports and domestic sales of pig iron, manganese, chrome and low phosphorus, iron ores, ferro-alloys, coal and coke.

### American Locomotive Company Has Record Year

The annual report of the American Locomotive Company for the fiscal year ended June 30, 1919, shows that that year was the most successful in the history of the company. During the year the company, working entirely on locomotive business, had the gross earnings of \$108,923,524 as compared with \$80,588,071 in the year ended June 30, 1918, or with \$82,213,845 in 1917. The profits for the year, after the deduction of interest, etc., and \$4,922,789 for income and war profits taxes, amounted to \$12,012,567 as compared with \$5,911,137 in the previous year. The same dividends were paid as in the preceding year, namely, 7 per cent on the preferred and 5 per cent on the common stock, leaving a surplus of \$9,012,567 as compared with \$2,911,137 in 1918. From this amount \$5,000,000 was set aside as a reserve for additions and betterments, leaving a net credit to profit and loss of \$4,012,567. In the fiscal year ended June 30, 1918, only \$1,000,000 was set aside for reserves for additions and betterments and the credit to profit and loss was only \$1,911,137.

President Andrew Fletcher in his report to the stockholders, says that in arriving at the net profits for the year, there has been included under the heading of manufacturing expenses and deducted from earnings the sum of \$1,155,556 for depreciation and \$548,491 for new drawings and patterns. He also says that there was expended for permanent additions and betterments to the plants \$1,704,854, all of which has been charged against the reserve for such expenditures.

Mr. Fletcher also says in his report: "To offset the effect of the shorter working day and the increased cost of labor of all kinds, the management of the company, continuing the past policy of improving the physical conditions and facilities of the plants and increasing their efficiency, has set aside out of the profits of the year a reserve of \$5,000,000 for further additions and betterments. The advisability of making these improvements was demonstrated during the war, and while the plants were working to their full capacity, but they were deferred until they could be made without serious interference with the output. The improvements are now in progress and are principally to the Schenectady, Brooks and Montreal plants and for the extension of the company's steel casting plant at Chester, Pa.

"The tonnage produced in the year ended June 30, 1919, was about 23 per cent greater than the production of the preceding year. This was due to the new high records of production obtained at the larger plants of the company in the forepart of the year, and to the increased tonnage of the Montreal and Richmond plants, which during part of the preceding year were being converted from munitions to locomotive manufacturing.

"The amount of unfilled orders on the books on June 30, 1919, was \$16,034,678, compared with \$74,736,543 on June 30, 1918, and \$54,517,373 on December 31, 1918. Since the armistice was signed in November, 1918, the volume of sales has been very low. There was, however, a considerable amount of unfilled orders on hand when the war ended, and with new business booked subsequently, all plants except Pittsburgh were enabled to operate for the remaining months of the fiscal year at a slightly reduced rate of production. The Pittsburgh plant was closed at the completion of its schedule in March, 1919, and the reduced volume of business concentrated at the larger and more efficient plants of the company. There has been \$2,135,352 of new locomotive orders taken since July 1, 1919.

"The excess of current assets over current liabilities on June 30, 1919, was \$35,508,422.53.

"The amount of inventories of materials and supplies on hand and work in progress on June 30, 1919, was \$11,018,309, as compared with \$25,411,834 on June 30, 1918.

"During the year the company completed the order of 800 standardized locomotives for the United States Railroad Administration, which were contracted for on April 30, 1918.

The company also completed 381 standardized locomotives for the Railroad Administration, applying on a contract of 500, dated November 1, 1918. Because of the omission of Congress to provide funds prior to its adjournment in March last, the Railroad Administration was unable to meet its obligations in cash for locomotives delivered. To meet this situation the Director General of the Railroad Administration issued Certificates of Indebtedness bearing interest at five per cent for all unpaid bills due this company, and on June 30, 1919, the company had received from the Administration \$25,324,424.05, of such Certificates of Indebtedness.

"On July 15, 1919, the Railroad Administration, having obtained an appropriation from Congress, paid the Certificates of Indebtedness then held by our company, amounting to \$26,102,218.50. As this amount of cash added to other accumulations since July 1, 1919, is far in excess of immediate needs of the company because of the small amount of business on hand, the company has liquidated all of its loans payable, amounting to \$7,535,000, and purchased \$23,500,000 of U. S. Treasury 4½ per cent Certificates.

"The contract with the U. S. War Department for 190 trench locomotives, amounting to \$1,873,400, which was cancelled shortly after the signing of the armistice, has been adjusted without loss to the company.

"The immediate prospect of orders for domestic locomotives is not bright and undoubtedly this condition will continue until the ultimate disposition and financing of the railroads of the country, now under control of the United States Railroad Administration as a war measure, has been determined.

"While the company has been receiving orders for foreign service, a greater volume of foreign business could be obtained but for the problems of finance and credit, many of the inquiries requiring long terms of payment extending from five to ten years. Unquestionably a broad gage policy of credits to the foreign countries will have to be granted them in rebuilding their railroad facilities, so vitally necessary to their industrial growth and prosperity. One solution of this problem, in our opinion, would be obtained by forming a combination of railroad equipment companies and allied industries of this country together with banking interests, under the form of a Foreign Railway Equipment Finance Corporation, rather than by individual action by any railroad equipment company. Such combination would be permissible under the Clayton and Webb-Pomerene laws, and thereby afford an imperative relief to the foreign countries requiring our help in rehabilitating their transportation systems. The long delay in the settlement of peace is in a measure preventing the formulation of definite plans and action tending toward the re-establishment of normal business relations with European and other foreign countries.

The consolidated income account and general balance sheet follow:

#### CONSOLIDATED GENERAL BALANCE SHEET

American Locomotive Company and the Montreal Locomotive Works, Ltd.,  
June 30, 1919

ASSETS	
Cost of property (less depreciation reserves).....	\$43,154,192
Sundry securities owned.....	641,704
Current assets—	
Cash on hand and in banks.....	\$3,339,485
U. S. R. A. Certificates of Indebtedness.....	*25,324,424
Accounts and bills receivable.....	8,048,367
U. S. Liberty Loan Bonds.....	4,043,100
Canadian Victory Loan Bonds.....	542,900
Employees' subscriptions for U. S. Liberty Loan Bonds (less instalment payments).....	919,286
Employees' subscriptions for Canadian Victory Loan Bonds (less instalment payments).....	41,580
Accrued interest.....	229,617
Materials and supplies.....	\$7,046,931
Contract work in process.....	3,813,552
Locomotives and parts in stock.....	10,860,483
	157,826
Sundry deferred charges.....	\$53,507,069
	174,267
	\$97,477,232

\*The U. S. R. A. Certificates were paid on July 15, 1919.

LIABILITIES	
Capital stock—	
Preferred.....	\$25,000,000
Common.....	25,000,000
Bonded debt of constituent companies.....	1,957,000

Current liabilities—	
Accounts payable .....	\$2,384,621
Dividend on preferred stock payable July 22, 1919.....	437,500
Dividend on common stock payable July 3, 1919.....	312,500
Unclaimed interest and dividends.....	2,771
Loans payable—	
Purchase of Liberty Bonds.....	\$5,035,000
Other loans payable.....	2,500,000
	<hr/> \$7,535,000
Accruals for United States and Canadian income and war taxes	6,843,399
Sundry accrued expenses.....	482,855
	<hr/> \$17,998,646
Reserves for accident indemnity and miscellaneous items.....	794,017
Reserves for additions and betterments.....	4,886,494
	<hr/> \$17,998,646
Profit and loss—	
Balance June 30, 1918.....	\$17,828,507
Add—Surplus as shown in condensed income account.....	4,012,567
	<hr/> \$21,841,074
	<hr/> \$97,477,232

\*Loans payable were paid during July, 1919.

#### CONDENSED INCOME ACCOUNT

Of the American Locomotive Company and Montreal Locomotive Works, Limited, for the fiscal year ended June 30, 1919, as compared with the fiscal year ended June 30, 1918.

	1918-19	1917-18	Increase
Gross earnings .....	\$108,923,524	\$80,588,071	\$28,335,453
Manufacturing, maintenance, and administrative expenses and depreciation .....	91,569,915	70,358,566	21,211,350
Manufacturing profit .....	\$17,353,609	\$10,229,505	\$7,124,104
Interest, etc., on bonds of constituent companies, loans payable, etc.....	418,252	299,417	118,836
	<hr/> \$16,935,356	<hr/> \$9,930,088	<hr/> \$7,005,268
Deduct for United States and Canadian income and war profits taxes..	4,922,789	4,018,951	903,838
Available profit .....	\$12,012,567	\$5,911,137	\$6,101,430
Dividends on preferred stock at 7 per cent .....	1,750,000	1,750,000	.....
Dividends on common stock at 5 per cent .....	1,250,000	1,250,000	.....
Surplus .....	\$9,012,567	\$2,911,137	\$6,101,430
Reserve for additions and betterments	5,000,000	1,000,000	4,000,000
Net credit to profit and loss.....	\$4,012,567	\$1,911,137	\$2,101,430

## Trade Publications

**MAST HOIST BUCKET.**—A plant for handling concrete on small jobs by means of a hoist, bucket and chute is described and illustrated in a folder issued by the Insley Manufacturing Company, Indianapolis, Ind. This equipment is less elaborate than that covered by the tower and spouting system in that the tower is replaced by a mast.

**ELECTRIC TRAVELING CRANES.**—A new catalogue of Chesapeake cranes has been compiled by the Chesapeake Iron Works, Baltimore, Md. The book contains 28 pages, 9 in. by 11½ in. The first half is devoted to descriptions and illustrations of the various parts of the cranes, while the last half contains full page illustrations of installations.

**COLOR CHART FOR HEATING STEEL.**—The Onondaga Steel Company, Syracuse, N. Y., has prepared a graphic color chart containing directions for cutting on high speed steel for tool lengths, for forging and hardening forged tools, milling cutters and finished tools, and for tempering and annealing, with the temperatures for the different operations shown in color.

**CURTAIN ROLLER.**—The Curtain Supply Company, New York, is revising its catalogue, which will hereafter be issued in the form of bulletins describing and illustrating their various products. The first of these, R-2, covers the Rex all-metal curtain roller and consists of eight pages, describing the construction of the roller and illustrating the detail parts.

**HYDRAULIC MACHINERY.**—A catalogue of 63 pages, embracing all kinds of hydraulic machinery, has been prepared by William H. Wood, hydraulic engineer, Media, Pa. These machines include flanging, riveting, punching and shearing machines, cranes, hammers, valves, pumps, accumulators, etc. Several drawings are also shown of the Wood's flexible corrugated locomotive firebox, flanged on a sectional flanging press, and a summary of the results of comparative tests, made some years ago on the New York Central, of a Wood's firebox with arch tubes and a standard firebox without arch tubes.

## Financial and Construction

### Railway Financial News

**CHICAGO, ROCK ISLAND & PACIFIC.**—This company has applied to the Public Utilities Commission of Illinois for authority to issue its general mortgage gold bonds in the aggregate amount of \$1,000,000 and of its first and refunding mortgage gold bonds in the amount of \$7,999,000.

**OAKLAND, ANTIOCH & EASTERN.**—Authority to issue notes in renewal of notes issued to the Union Switch & Signal Company, Pope & Talbot Company, Charles Nelson & Company, J. A. Roebling's Sons Company, and the California National Bank of Sacramento, Cal., has been given to the Oakland, Antioch & Eastern by the Railroad Commission of the State of California. The notes, ranging in amount from \$2,374 to \$40,000, were issued originally to cover the cost of material and supplies used in road construction.

**WESTERN PACIFIC.**—See editorial elsewhere in this issue.

### Railway Construction

**SIKESTON & SOUTHEASTERN.**—The directors of this road, at a meeting held in Charleston, Mo., decided to proceed with their plans for constructing a railroad to the Mississippi river, opposite Hickman, Ky., crossing Mississippi county near East Prairie. Residents of Sikeston are backing this project as a means of securing better freight rates through the use of the Mississippi river.

**SOUTHERN RAILROAD LINES.**—The contract for the steel work on the new bridge of the Cincinnati, New Orleans & Texas Pacific over the Tennessee River near Chattanooga, Tenn., has been awarded to the American Bridge Company.

**THE NORTHERN PACIFIC.**—Contracts have been let to J. L. Shiely & Co., St. Paul, Minn., for the excavating work, and to the J. & W. A. Elliott Company, Minneapolis, Minn., for the construction of a hospital for the Northern Pacific Beneficial Association at St. Paul, Minn. The building will be of reinforced concrete, stone and brick construction, 42 ft. by 280 ft. with a wing 42 ft. by 60 ft. and will cost approximately \$500,000, including a garage and power plant. All excavation and concrete footings have been completed and it is expected that the hospital will be ready for occupancy by the first of the year. Following the completion of the hospital proper, a nurses' home and two residences for the head physicians will be constructed. The new hospital will accommodate 150 patients.

**UNION PACIFIC.**—The new terminal at Council Bluffs, Iowa, is nearing completion and will be ready for service about September 15. The new terminal is composed of a modern 40-stall roundhouse, a new machine shop, 72 ft. by 209 ft., a modern power plant and a 650-ton coaling station. The new roundhouse of steel, brick and concrete is nearly completed with the exception of painting, the installation of a washout system and the building of a turntable foundation. In adjoining buildings of the same construction are located the tool rooms, the office of the roundhouse foreman and washrooms for the engineers and roundhouse workmen. A new sand house and sand bin have also been erected, the former being of brick and the latter having a capacity of 50 cars of sand.

The membership in the American Society for Testing Materials has passed the 2,500 mark, the present membership being 2,538. While the growth of the society has been steady it has never been as rapid as during the present year, during the first eight months of which 313 new members were enrolled.

## Railway Officers

### Railroad Administration

#### Operating

**R. K. Rochester**, formerly superintendent of the Cleveland and Pittsburgh division of the Pennsylvania, Lines West, Northwest system, with office at Cleveland, Ohio, and more recently a major in the army has received his discharge from military service and has resumed his duties as superintendent, succeeding **G. LeBoutillier**, who has been transferred.

**F. W. Boardman** has been appointed fuel supervisor of the Texas & Pacific, the Trans-Mississippi Terminal Railroad, the Weatherford, Mineral Wells & Northwestern, the Gulf, Texas & Western, the Denison & Pacific Suburban Railroad, and the Fort Worth Belt Railroad, with headquarters at Dallas, Texas, succeeding **W. L. McMurray**, assigned to other duties.

#### Engineering and Rolling Stock

**C. A. Plumly** has been appointed valuation engineer of the Maine Central with office at Portland, Maine.

**A. W. Macpherson**, chief engineer of the San Francisco-Oakland Terminal for the past five years, has resigned to engage in other business. He will also organize a general contracting firm with headquarters at Woodland, Cal.

**J. J. Maginn**, formerly master mechanic of the Cincinnati Northern at Van Wert, Ohio, has been appointed superintendent of motive power of the Lake Erie & Western, with headquarters at Lima, Ohio, vice **George J. Duffey**, deceased.

**L. L. Sparrow** has been appointed principal assistant engineer of the Atlantic Coast Line with office at Wilmington, N. C., succeeding **T. L. Morton**, deceased. **George G. Thomas, Jr.**, has been appointed office engineer, succeeding Mr. Sparrow.

**L. R. Wink** has been appointed assistant superintendent of the car department of the Chicago & Northwestern with offices at Chicago. **C. J. Nelson** has been appointed general foreman of the car department in charge of the Galena and Wisconsin divisions and Chicago Terminals, succeeding Mr. Wink.

**Captains John Maher, George B. Farlow, Joseph M. Lewis, Paul W. Elmore** and **Lieutenants W. B. Maurer, J. W. Purdy** and **J. D. Stemm** have been discharged from military service and have resumed their duties as assistant engineers on the Baltimore & Ohio, Western Lines, with headquarters at Cincinnati, Ohio.

**Otis Weeks**, who has been discharged from military service, has been reappointed division engineer of the Salt Lake division of the Southern Pacific, with headquarters at Ogden, Utah, in place of **W. F. Turner**, assigned to other duties. **F. W. Bordwell** has been appointed division engineer of the San Joaquin division, with headquarters at Bakersfield, Cal., in place of **P. T. Robinson**, assigned to other duties.

**Lieut. Leigh Budwell** has resumed his duties as mechanical engineer of the Richmond, Fredericksburg & Potomac and the Washington Southern, with headquarters at Richmond, Va., having just returned from 12 months' service in the Transportation Corps in France, where he served as master mechanic in the 16th Grand Division. **B. J. Coffman**, who has been acting mechanical engineer during the absence of Lieutenant Budwell, has been assigned to other duties in the mechanical department.

### Corporate

#### Executive, Financial, Legal and Accounting

**S. S. Senne**, assistant to the receiver of the Louisiana & North West has resigned to become vice-president and gen-

eral manager of the Westfield Motor Railway Company with headquarters at Westfield, Ill.

#### Engineering and Rolling Stock

**G. P. MacLaren** has been appointed district engineer of the Ontario district of the Canadian National with headquarters at Toronto, Ont.

**A. H. Kendall** has been appointed master mechanic of the Quebec district of the Canadian Pacific with office at Montreal, Canada, succeeding **C. A. Wheeler**, transferred.

**Theodore C. Fischer**, whose appointment as corporate engineer of the Central Railroad of New Jersey with headquarters at New York, was recently announced in these columns, was born on August 14, 1879, at Philadelphia, Pa. He was educated at Rutgers College, graduating with the class of 1899. In June, 1899, he entered the service of the Central Railroad of New Jersey as rodman in the engineering department. He was made transitman in December, 1902, and assistant engineer in January, 1906. On January 1, 1917, he was promoted to office engineer, which position he held at the time of his recent appointment as noted above.

#### Traffic

**M. Frank Tompkins**, who has been appointed general freight agent on the Canadian National Railways, with headquarters at Moncton, N. B., as has already been announced in



M. F. Tompkins

these columns, was born on December 6, 1878, at Margaree, N. S., and was educated in the public schools at Truro. He began railway work on November 23, 1896, with the Intercolonial Railway, now a part of the Canadian National Railways, as a telegraph operator, and served at various places until February, 1900. He was then, until May of the same year, freight clerk at Truro and subsequently to September, 1902, served in a similar position at Sydney. On September 1, 1902, he was appointed accountant in the superintendent's of-

fice at New Glasgow, and from July, 1903, for one year was telegraph operator at the same place. He then served as relieving agent at different places until January, 1911, when he became chief clerk in the division freight agent's office at Halifax. On November 30, 1914, he was appointed division freight agent at the same place and, since June, 1917, was assistant general freight agent at Moncton, N. B., until his promotion to general freight agent as above noted.

### Obituary

**Thomas L. Morton**, principal assistant engineer of the Atlantic Coast Line, died at the hospital of the University of Virginia on August 27, 1919, after an illness of about three months. Mr. Morton was born at Petersburg, Va., on May 31, 1854, and was educated at McCates School, Richmond, Va., and Oxford University, England. He entered the service of the Plant System in 1883 as engineer in charge of location and construction of the line from Tampa, Fla., to Kissimmee, Fla., and continued after the completion of that work with the Plant System in charge of the location and construction of many of the Florida lines of that company. When the Plant System was purchased by the Atlantic Coast Line in 1902, Mr. Morton remained with the railroad, holding various positions in the engineering department until he was promoted to that of principal assistant engineer.

# EDITORIAL

## Railway Age

# EDITORIAL

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China is looked upon as a large potential market for railway material and supplies and American capital hopes to be able

### The Shantung Situation

to build no small share of the great additions that must be made to China's present inadequate railway mileage. Thus far, we have not had much success. It has been the practice in the main for railway supplies to be bought in the countries owning the concessions for the railways, and the United States has not been one of them. Readers of the *Railway Age* are also familiar through our special correspondence from Peking with the difficulties American railway builders have encountered in being told that lines surveyed by American parties are already covered by some prior concession or that such lines enter a sphere of influence already spoken for. The difficulty has been that America, unlike its competitors—for such they are in a matter of this kind—has not presented a firm front or a settled policy diplomatically in the Far East. This is now being emphasized as the discussion at the Peace Conference is brought to light. It appears that England and France, although they were closer to the United States than to Japan during the war, and despite their great interests in China, tended in the conference towards Japan rather than towards the United States in matters affecting China. The explanation given is that they did so principally because Japan has a definite policy whereas we have not. American railway supply men who are expecting so much from the proposed American railway building in China, as well as those directly interested in this railway building, cannot feel satisfied with this condition. America has the friendship of China as no other country has, but the American doing business in China would prefer to be in a position to use that friendship in a business way. He does not like merely to see America friendly; he also wants to be able to deal with China on the same basis as his business competitors. At present, as is shown by the experiences undergone by the railroad builders above mentioned, such is not the case. It will not be the case until the United States adopts a firmer policy towards the Far East and maintains a policy which protects and stands back of American citizens to the same extent as the policies of other countries stand back of their citizens in China.

The article printed elsewhere, discussing the advantages of the logarithmic chart over the chart plotted on an arithmetical

### How to Use Charts

scale, suggests but does not clearly bring out the limitations of graphic charts. Whether a column of figures is plotted out on a graphic chart and studied in this form or whether the figures, themselves, are studied, a real analysis is possible only when the student has in his own mind the related facts which give either the chart or the figures significance. Plot cumulative monthly earnings and expenses of a particular railroad on but a horizontal scale of two inches to the month and a vertical scale of \$1,000 to the inch; then plot the same figures with the same vertical scale with a horizontal scale of a half inch to a month, and see how very much steeper are the curves. The two charts, however, represent the same set

of facts, yet the apparent trend is quite different. But one of the advantages which is claimed for charts as compared with columns of figures is that the charts will show at a glance the trend. A chart does not show anything significant at a glance; it has to be studied just as a column of figures has to be studied. The column of figures, however, has its limitations just as has the chart. Even if a student of a column of figures, mentally or otherwise, translates changes into percentages, he still fails to make a significant analysis unless he knows many facts not shown by the figures alone. For instance, what for a particular month would be a large gross increase in expenses on one road and also a large percentage of increase might be an insignificant increase on another road. A decrease of 40 tons or 10 per cent in train loading in December as compared with November on the Florida East Coast would be a large decrease. A decrease of 60 tons or 10 per cent in train loading on the Northern Pacific in December might not be at all abnormal. Charts, whether logarithmic or arithmetical, may be useful. Certainly, plotting a chart serves to fix the figures firmly in the mind of the man who does the plotting; but charts will be a hindrance, not a help, if they fool the student into believing that he can make an analysis of a situation "at a glance."

One of the most extraordinary features of the present railroad situation is that many people who are in favor of

### The Fatal Defect of the Cummins Bill

returning the railroads to private operation because they believe private management is more efficient than government management, are at the same time opposed to doing what is necessary to enable the railways to be efficiently and successfully operated under private management. The members of the Senate subcommittee on Interstate Commerce which drafted the Cummins bill are all in favor of a private ownership and management. They are opposed to government management because they believe private management is more efficient. Therefore, they provide for the return of the railroads to private management. But apparently they have overlooked the main thing that always has made private more efficient than government management. This has been the opportunity which has been afforded to increase profits by increasing efficiency. The Cummins bill proposes to destroy this opportunity. While it provides for the return of the railroads to private management, it also provides that if any railroad shall earn more in any year than the Interstate Commerce Commission shall deem to be a "fair return upon a fair value" the entire surplus earned shall be taken from the railway company earning it. This means that once a railroad began to earn a "fair return" it would never be able to increase its profits by increasing the efficiency of its management. Not only would the Cummins bill destroy all incentive to increase efficiency on many railroads, but it would do it in a most unfair way. It provides that the Interstate Commerce Commission shall so fix rates that each group of railroads shall earn a fair return upon the fair value of their combined property, and, also as we have seen, that if any road in any year earns more than a fair return all its surplus earnings shall be taken from it. Suppose, however,